

# TV-1120M<sup>2487</sup>



B&W TV

## SPECIFICATIONS

Picture tube:		11" 90° deflection		Sound system:		Power output: 800 mV (less than 10 % distortion)	
Semiconductors:		31 transistors, 22 diodes, 1 thermistor, 1 IC and 1 high voltage selenium rectifier		Speaker:		80 mm x 120 mm (3 1/8" x 4 3/4"), impedance; 16 Ω	
Channel coverage:		VHF; French F2, F4-F12 CCIR Western European, Belgian E2-E12 Italian B (E4), D (E5) H (E10), H1 (E-11) UHF; 21 ~ 69		Automatic controls:		TU VIF mean value forward AGC AM SIF mean value AGC Single pulse AFC	
Antenna system:		VHF; Built-in telescopic antenna Terminals for 300 Ω external antenna UHF; Loop antenna Terminals for 300 Ω external antenna		Power requirements:		AC 110 V, 130 V, 220 V 50Hz DC 12 V	
IF circuit:		3 stages with 4 stagger tuned elements		Power consumption:		AC 37 W (maximum) DC 21 W (maximum)	
Intermediate frequency:				Dimensions:		302 mm (W) x 314 mm (H) x 301 mm (D) (11 7/8" x 12 3/8" x 11 5/8")	
				Weight:		7.4 kg (16 lb 5 oz)	
				Accessories:		Earphone (ME-20B) Loop antenna (AN-8) Instruction manual Polishing cloth	
				Optional accessories:		Battery pack BP-7 (Sony) Battery #564 (Everead) TOB-1235 SY (Sonnenschein) Car battery cord DCC-11,5 External antenna connector EAC10 Car antenna VCA-1, -1H, -2	

				Video IF	Sound IF
Intercarrier system	CCIR	VHF	625	38.9 MHz	33.4 MHz
		UHF	625	38.9 MHz	33.4 MHz
Separate-carrier system	French	VHF	625	38.9 MHz,	27.75 MHz,
			819	34.9 MHz	46.05 MHz
	French	UHF	625	38.9 MHz	32.4 MHz
			819		
Belgian	VHF	625	38.9 MHz	33.4 MHz	

**SONY**  
**SERVICE MANUAL**

## SECTION 1 OUTLINE

### 1-1. BLOCK DIAGRAM

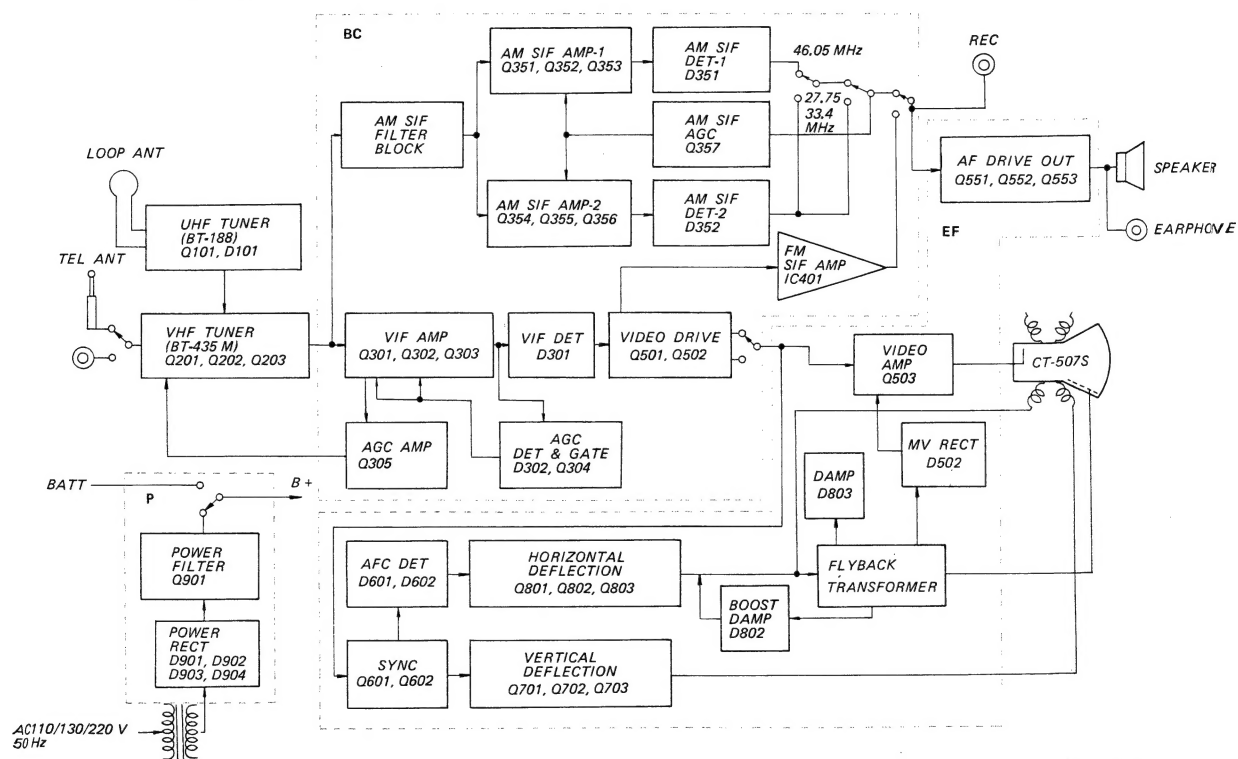


Fig. 1-1

## 1-2. EXTERNAL VIEW

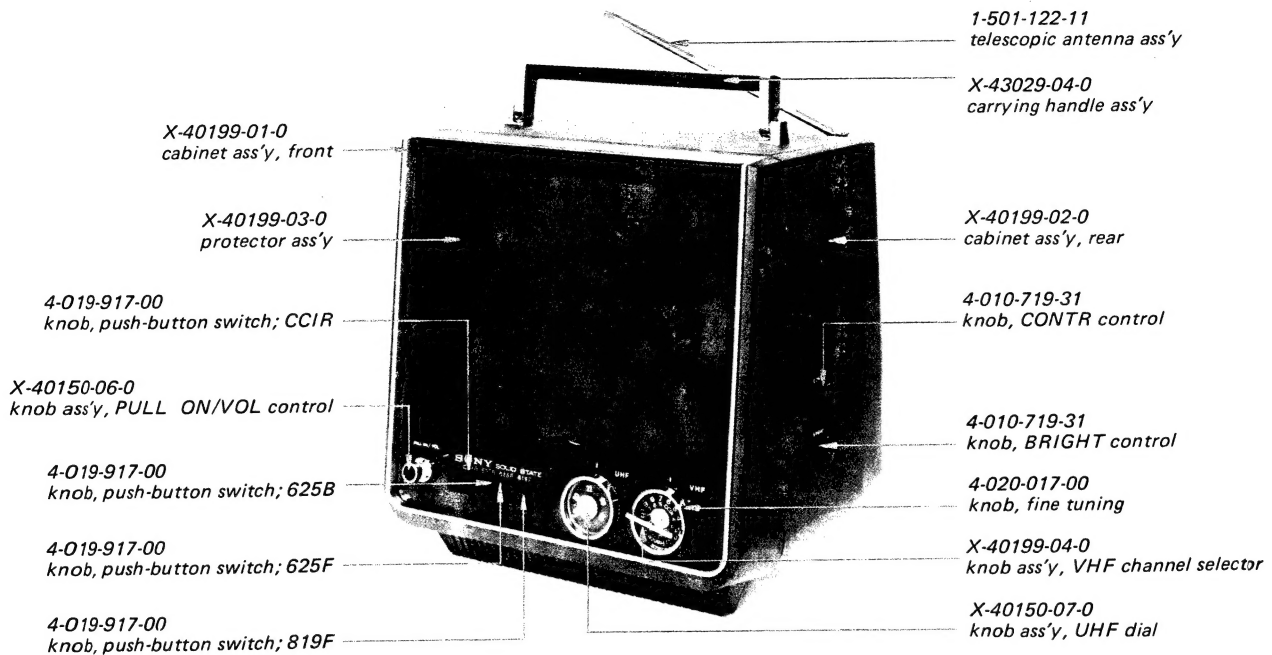


Fig. 1-2.

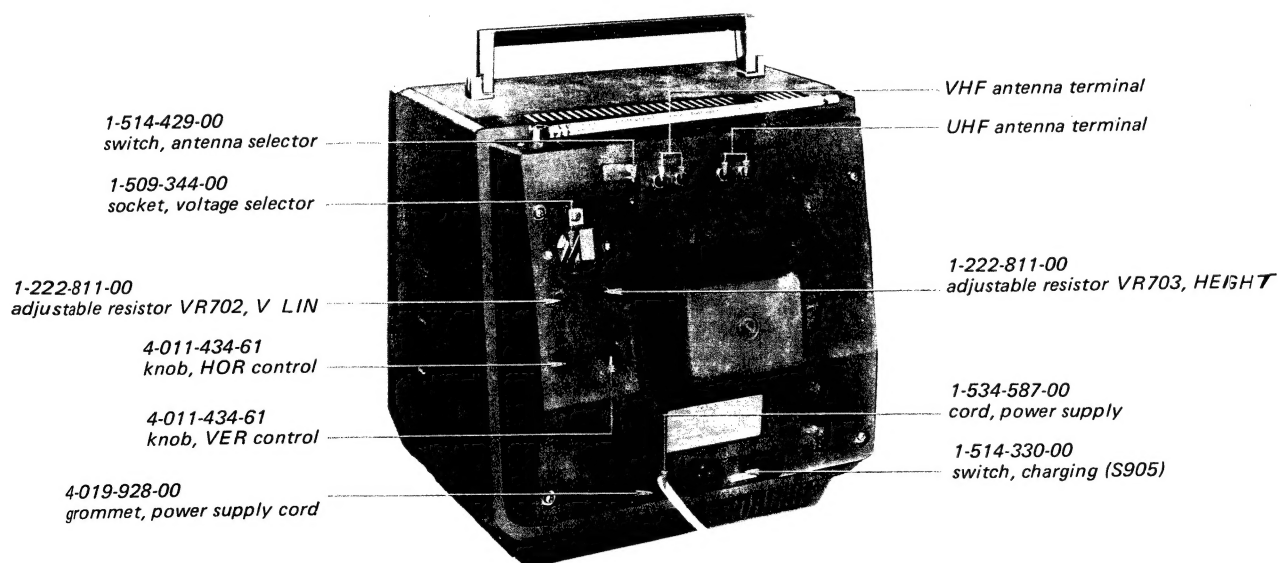


Fig. 1-3.

### 1-3. INTERNAL VIEW

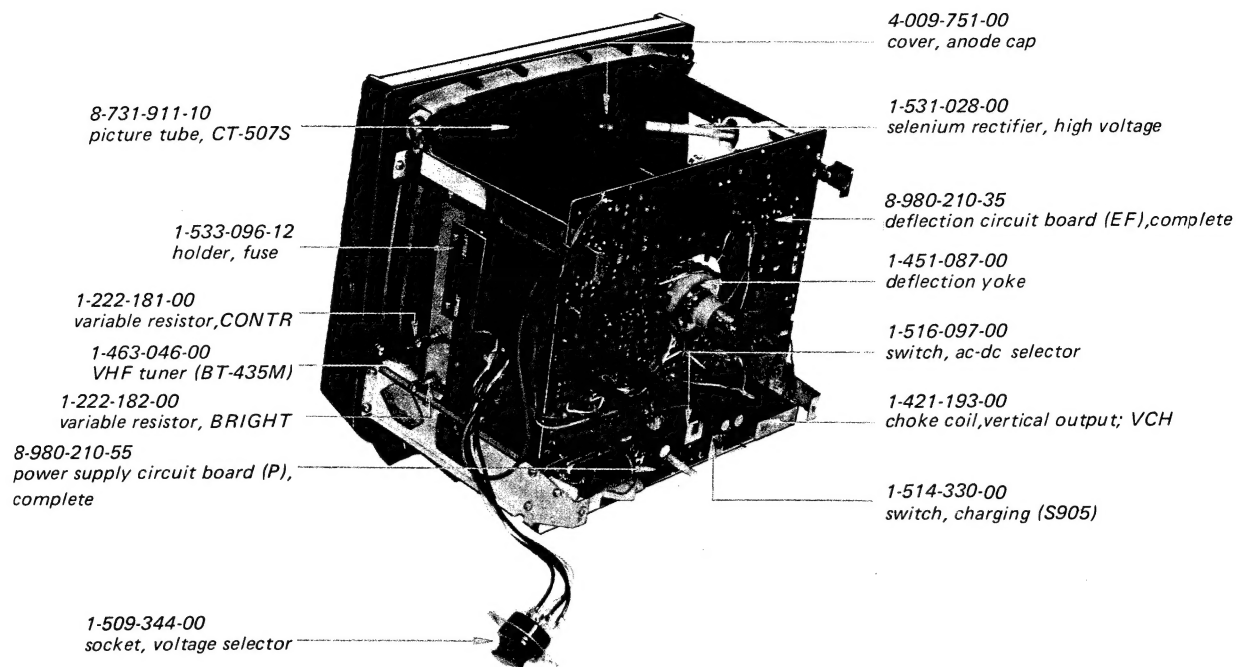


Fig. 1-4.

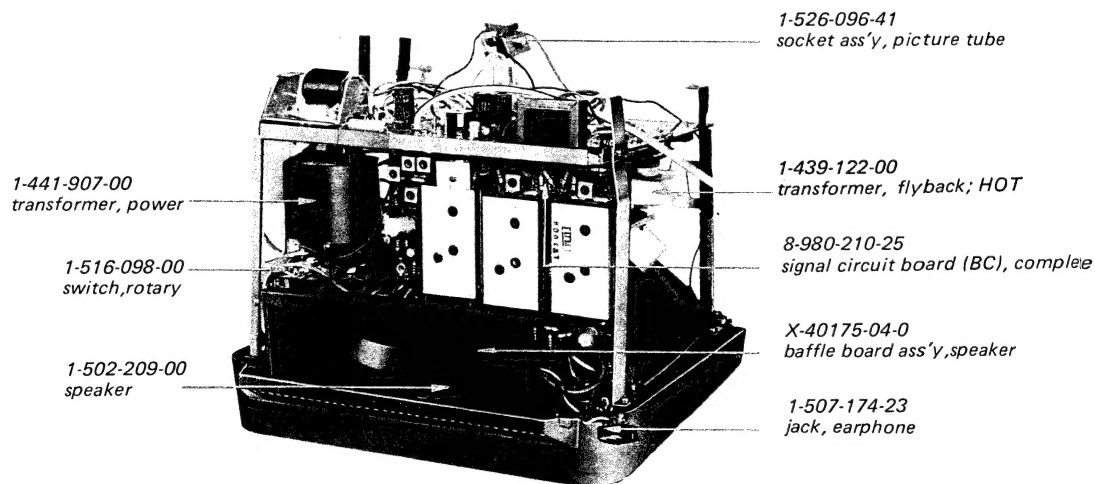


Fig. 1-5.



## SECTION 2

### DISASSEMBLY

#### 2-1. REAR CABINET REMOVAL

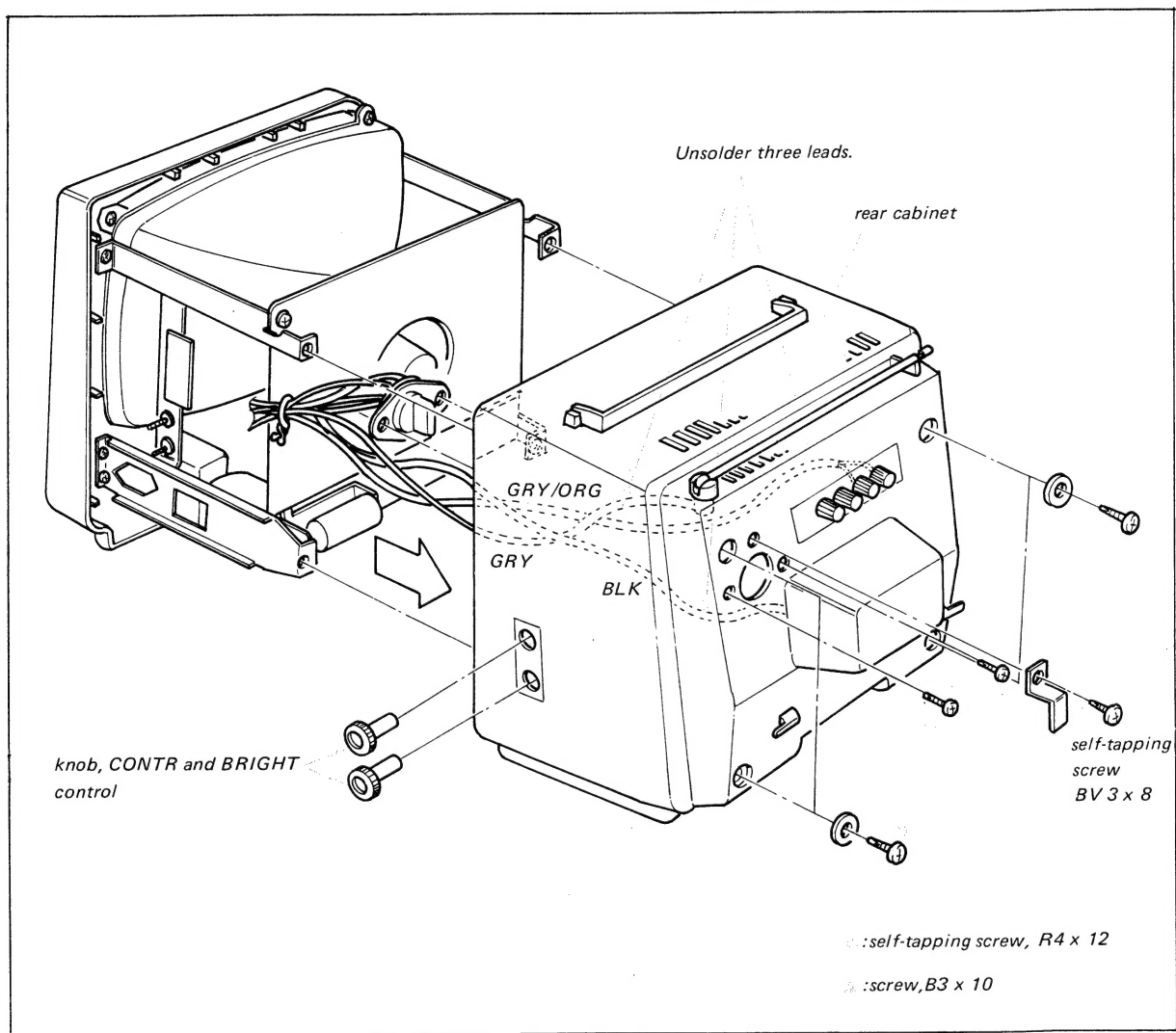


Fig. 2-1.

All screws in this set are phillips type (cross recess type).

## 2-2. P AND EF BOARD REMOVAL

1. Remove the rear cabinet.
2. Remove the P and EF boards in numerical order.

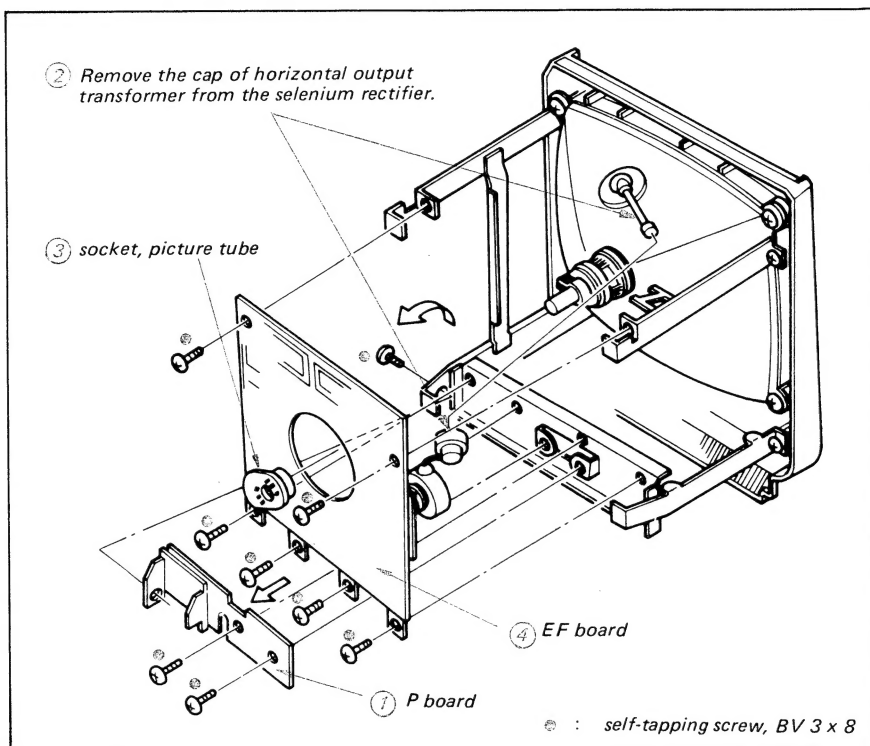


Fig. 2-2.

## 2-3. BC BOARD REMOVAL

Remove the rear cabinet.

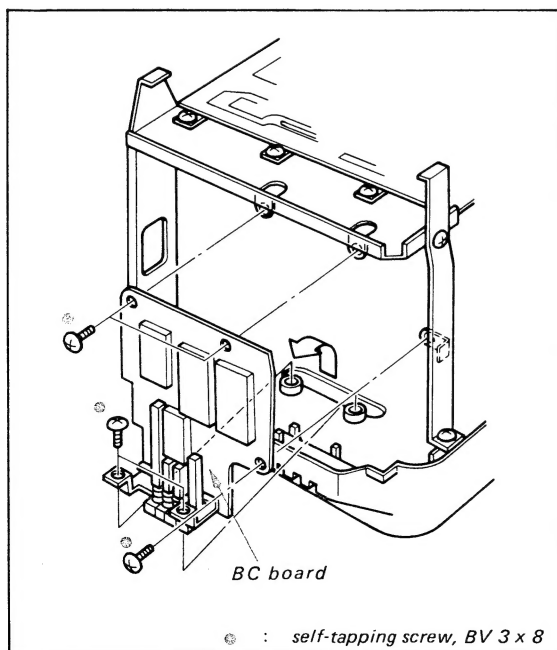


Fig. 2-3.

## 2-4. PROTECTOR REMOVAL

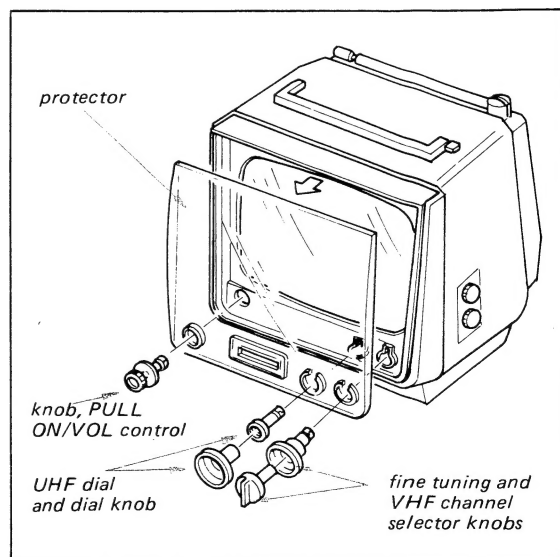


Fig. 2-4.



SECTION 3  
CIRCUIT ADJUSTMENTS

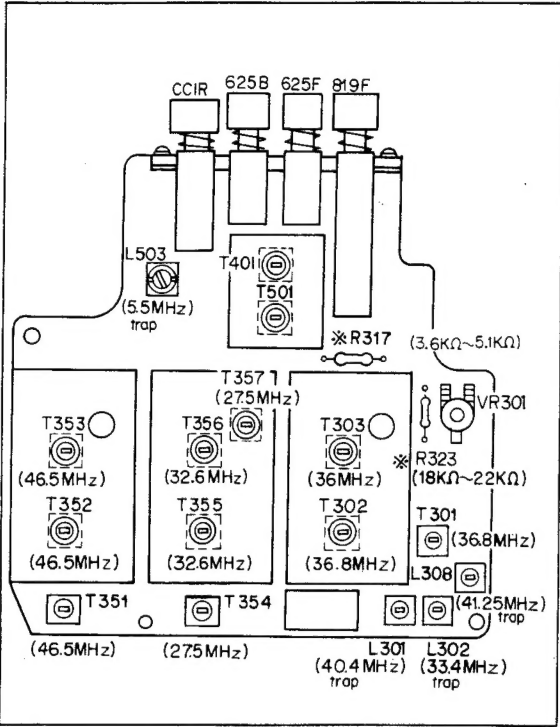


Fig. 3-1. Adjusting parts location of VIF and SIF adjustment

3-1. VIF ADJUSTMENT

Emitter Current  $I_e$  Adjustment of Q301

See Fig. 3-2.

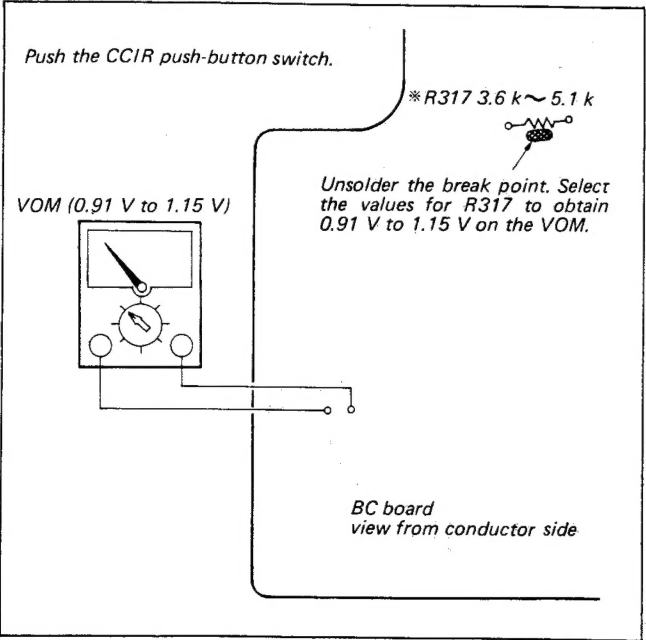


Fig. 3-2.

Equipment Required

Sweep generator  
Signal generator  
Marker generator  
Oscilloscope  
VOM  
Rheostat (250 k $\Omega$ )

Preparation

1. Make sure that the normal power voltage is obtained.
2. Set the channel selector to the highest inactive channel in the area.

33.4 MHz, 40.4 MHz and 41.25 MHz Trap Coil Adjustment

1. See Fig. 3-3.
2. Push the CCIR push-button switch.
3. Supply each strong signal of 33.4 MHz, 40.4 MHz and 41.25 MHz, with 1 kHz 40 % a-m modulation from the signal generator.
4. Turn the 250 k $\Omega$  rheostat to obtain the optimum waveform for adjustment.
5. Adjust L301, L302 and L308 for minimum output waveform.

VIF Response Curve Adjustment

1. See Fig. 3-3.
2. Push the CCIR push-button switch.
3. Turn the 250 k $\Omega$  rheostat to obtain 2.25 V on the VOM.
4. Supply each signal of 36 MHz, 36.8 MHz and 38 MHz, with 1 kHz 40 % a-m modulation from the signal generator.
5. Adjust T301, T302 and T303, and L207 for maximum output waveform on the scope.
6. If the sweep generator is available, make sure that the optimum response curve is obtained on the scope as shown.

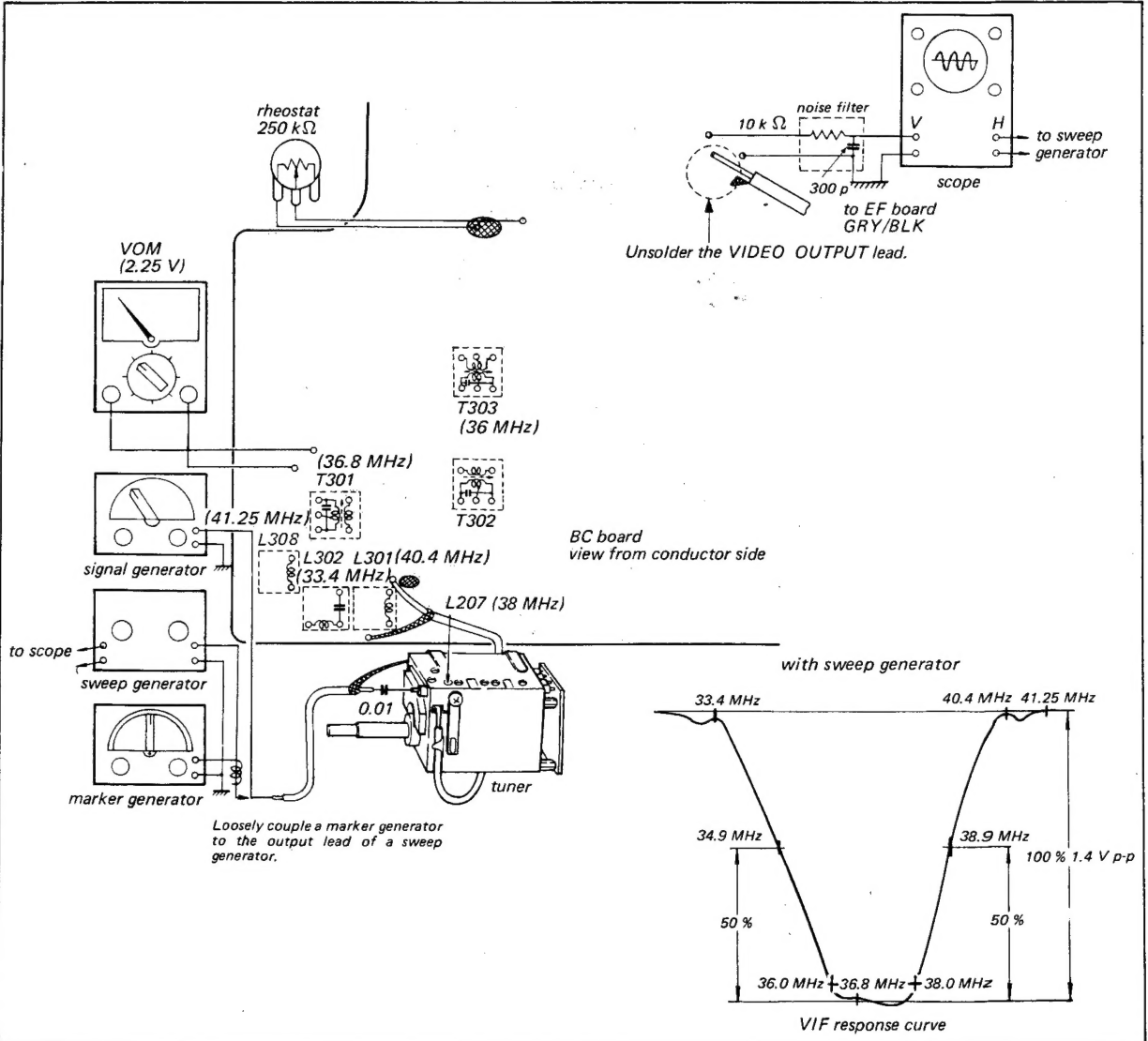


Fig. 3-3.

### Tuner AGC Adjustment

1. See Fig. 3-4.
2. Push the CCIR push-button switch.
3. Select the values for R323 to obtain 1.25 V to 1.35 V on the VOM.

### AGC Delay Adjustment

1. See Fig. 3-4.
2. Push the CCIR push-button switch.
3. Measure the voltage on the VOM with no signal. It should be 1.25 V to 1.35 V.
4. Supply the same frequency signal (with 1 kHz, 40 % a-m modulation) as the channel signal of the TV set.
5. Adjust the VR301 to obtain 0.2 V higher than the voltage measured at step 3.

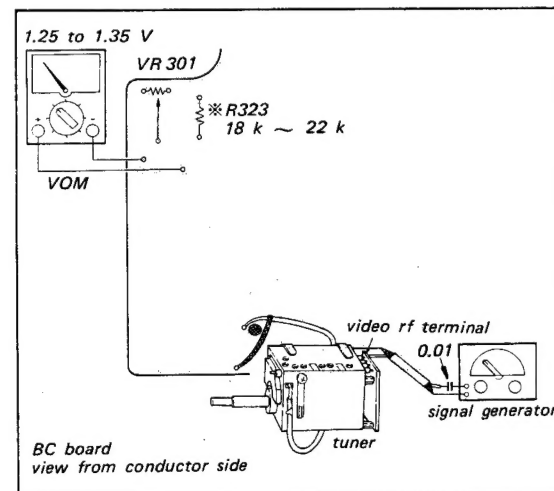


Fig. 3-4.

### 3-2. SIF ADJUSTMENT

#### FM SIF Adjustment

1. See Fig. 3-5.
2. Push the CCIR push-button switch.
3. Set the signal generator to 5.5 MHz with 1 kHz 30 % a-m modulation (50 dB).
4. Turn the core of T401 counterclockwise two or three times.
5. Adjust T501 for maximum output waveform.
6. Adjust T401 for minimum output waveform.
7. If the sweep generator is available, make sure that the optimum response curve is obtained.
8. Make sure that the buzz sound is not heard from the speaker.

#### 5.5 MHz Trap Coil Adjustment

1. See Fig. 3-5 and 3-6.
2. Push the CCIR push-button switch.
3. Supply the strong 5.5 MHz signal with 400 Hz 40 % a-m modulation from the signal generator.
4. Adjust L503 to eliminate the stripe from the picture.

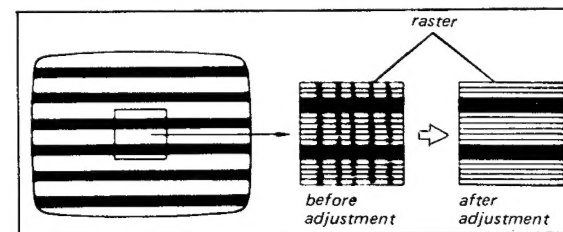


Fig. 3-6.

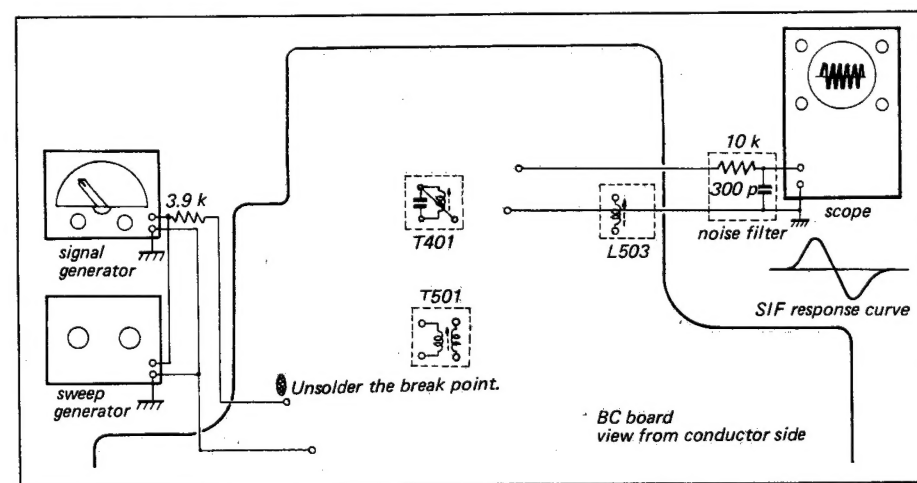


Fig. 3-5.

### AM SIF-1 Adjustment

1. See Fig. 3-7.
2. Push the 819F push-button.
3. Supply the 46.5 MHz signal with 1 kHz 40 % a-m modulation from the signal generator.
4. Adjust T351, T352 and T353 for maximum output on the scope.

**Note:** The height of the modulated waveform changes, when adjusting transformers. Readjust the output level of the signal generator to obtain 0.1 V (p-p) waveform constantly.

5. If a sweep generator is available, make sure that the optimum response curve is obtained.

### AM SIF-2 Adjustment

1. See Fig. 3-7.
2. Push the 625B push-button.
3. Supply the 27.5 MHz signal with 1 kHz 40 % a-m modulation from the signal generator.
4. Adjust T354 and T357 for maximum output on the scope.
5. Change the frequency of signal generator to 32.6 MHz.
6. Adjust T355 and T356 for maximum output on the scope.
7. If a sweep generator is available, make sure that the optimum response curve is obtained.

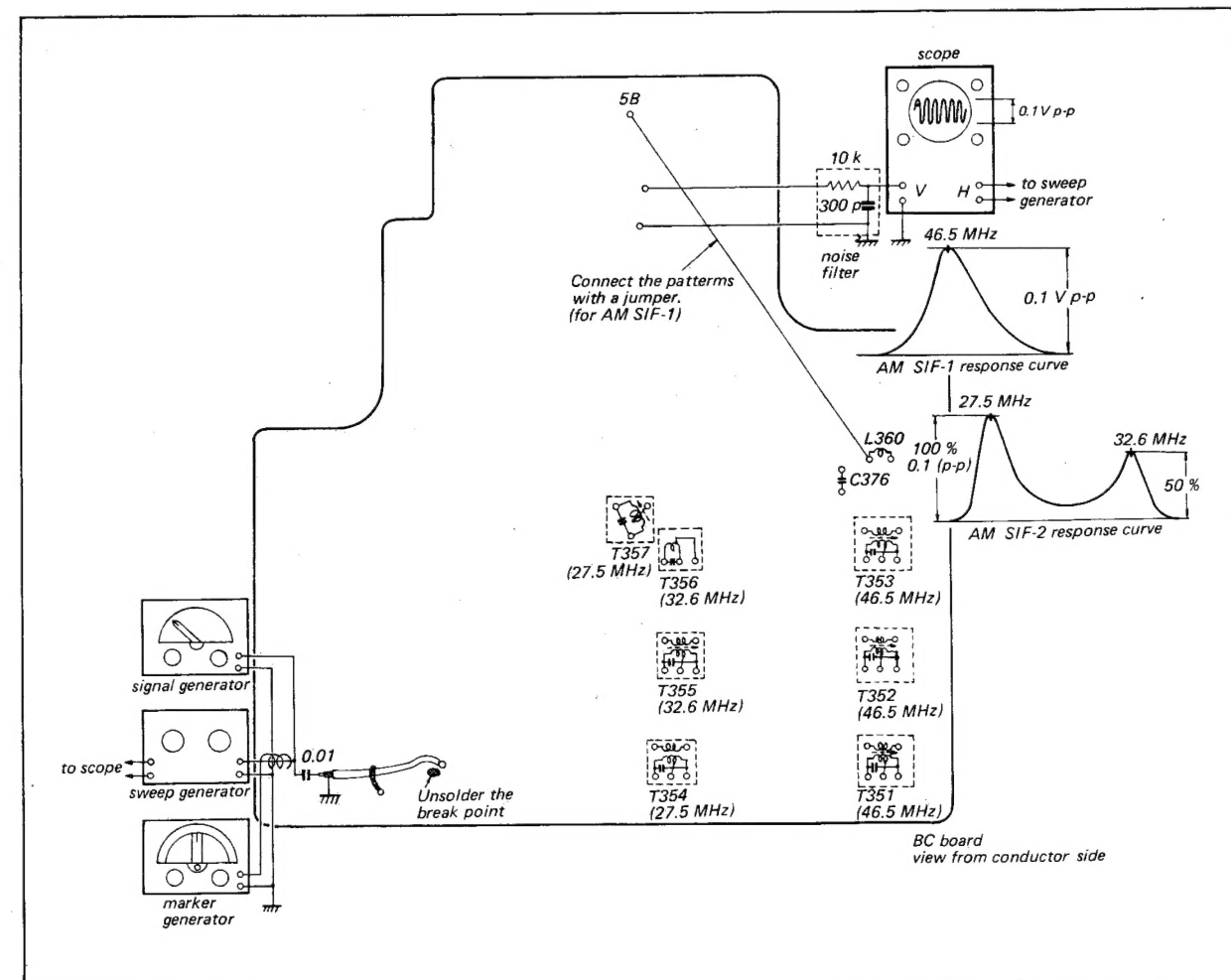


Fig. 3-7.

### 3-3. DEFLECTION CIRCUIT ADJUSTMENT

#### Preparation

1. Make sure that the normal power voltage is obtained.
2. Receive an off-the-air signal.
3. Push the 819F push-button.
4. Set the CONTR and BRT controls to the position where optimum picture can be obtained.
5. After making adjustment for 819 lines, perform the same steps by pushing the 625B push-button.

#### Horizontal Pulse-width Adjustment

See Fig. 3-8 and 3-9.

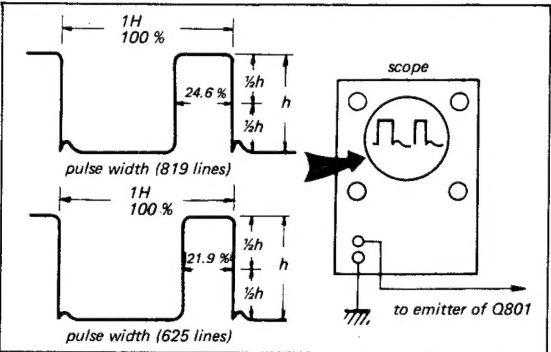


Fig. 3-8.

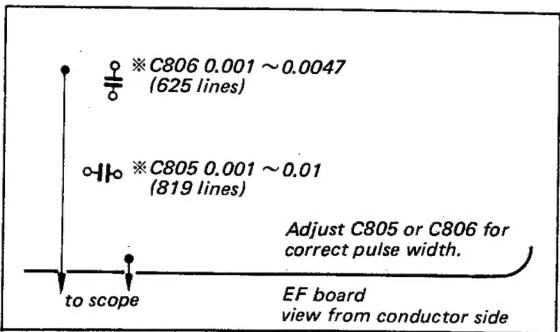


Fig. 3-9.

Note: C806 should be adjusted after C805 is adjusted.

#### Horizontal Frequency Adjustment

See Fig. 3-10 and 3-11.

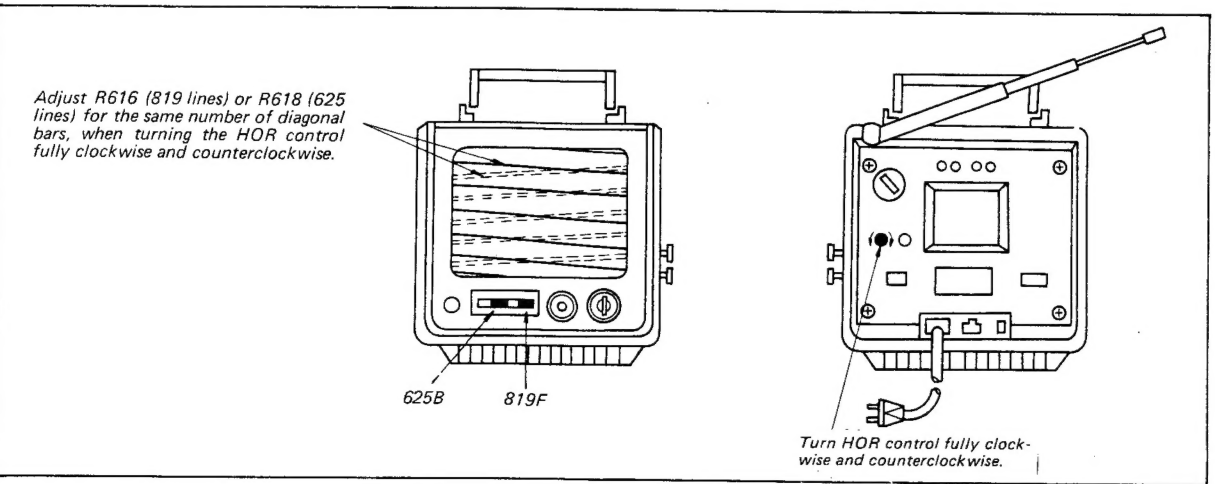


Fig. 3-10.

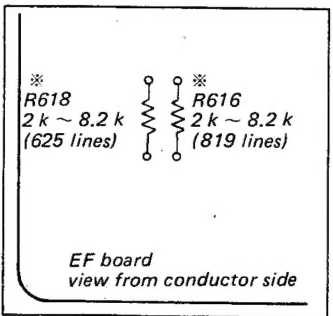


Fig 3-11.

#### Horizontal Size Adjustment

See Fig. 3-12 and 3-13.

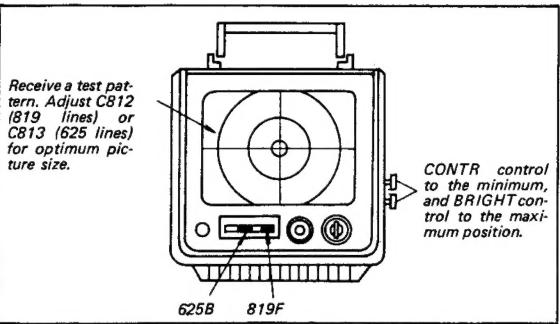


Fig. 3-12.

Note: C813 should be adjusted after C812 is adjusted.

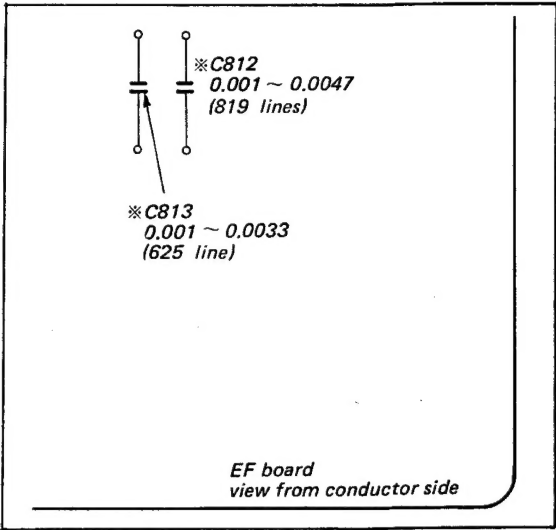


Fig. 3-13.

#### Vertical Bias Adjustment

See Fig. 3-14.

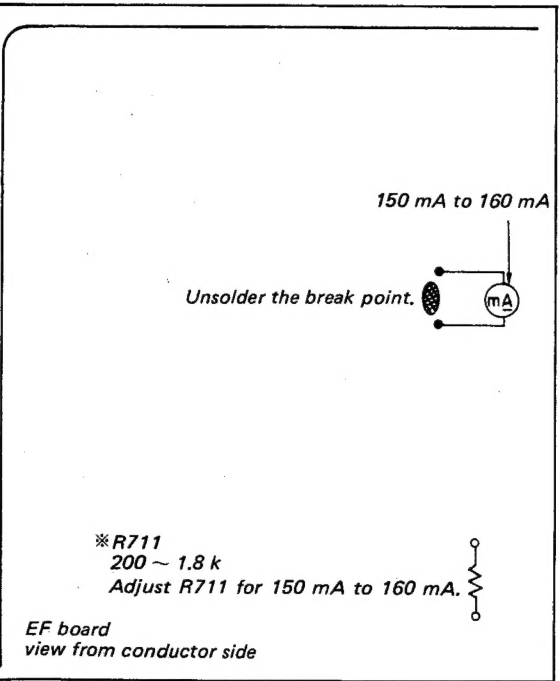


Fig. 3-14.

After making adjustment, check the current for the same value by pushing the 625B push-button.

#### Vertical Height and Linearity Adjustment

See Fig. 3-15.

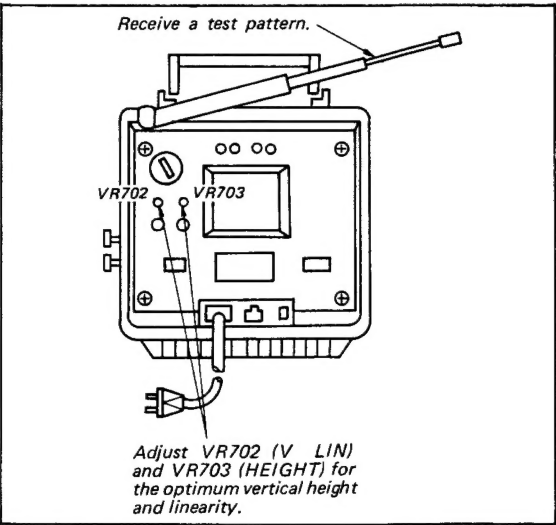


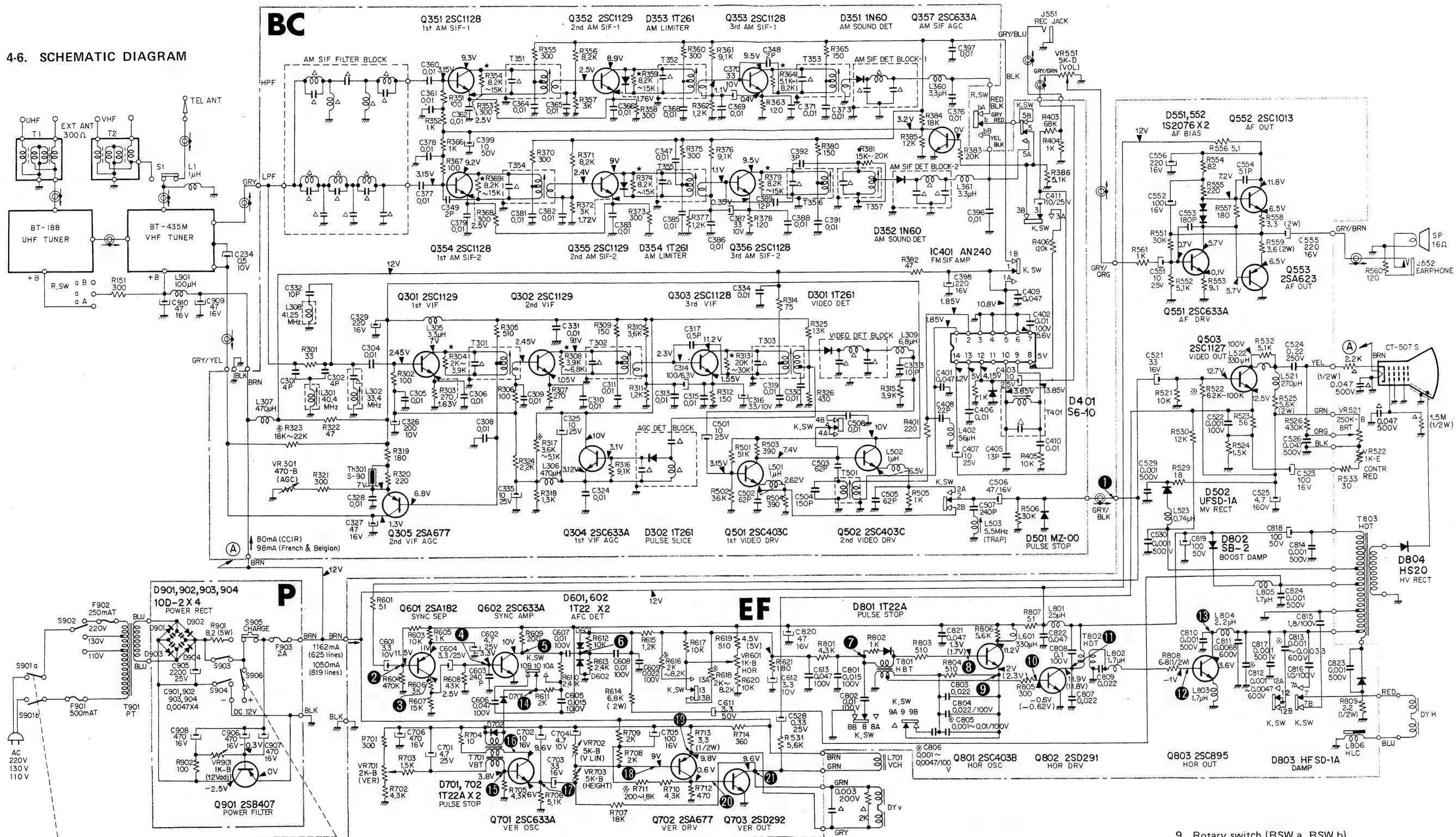
Fig. 3-15.

After making adjustment, check for the same vertical height and linearity by pushing the 625B push-button.



**TV-112UM TV-112UM**

#### 4-6. SCHEMATIC DIAGRAM



**Note:** 1. All capacitors are 50 WV unless otherwise specified.

2. All capacitance values are in  $\mu\text{F}$  except as indicated with p, which means  $\mu\mu\text{F}$ .

3. All resistors are  $\frac{1}{4}$  W unless otherwise specified.

4. All resistance values are in ohms.  $k = 1000$ .

5. Voltages measured from chassis to point indicated with a VOM (DC 20 k ohms/V) with no signal input (BC circuit and audio stages in EF circuit), and with signal input (EF circuit). The values shown in ( ) are measured with push switch set to 819.

6. Resistance and capacitance values marked ※ are to be selected to yield specified operating conditions.

7. The red circled numbers ( ❶ ~ ❷❶ ) indicate the waveforms on pages 19 and 20.

8. Push-button switch (KSW 1 to KSW 13)

A ; on (push) position

B ; off position

KSW 1 ~ 4 ; CCIR

KSW 5 ; 625B

KSW 7 ~ 13 ; 819F

9 Rotary switch (RSW a, RSW b)

RSW a    aA ; UHF  
          aB ; VHF

RSW b    bA   ;   F2, 4, 5, 8, 10, 12 ch.  
              bB   ;   F6, 7, 9, 11, U ch.

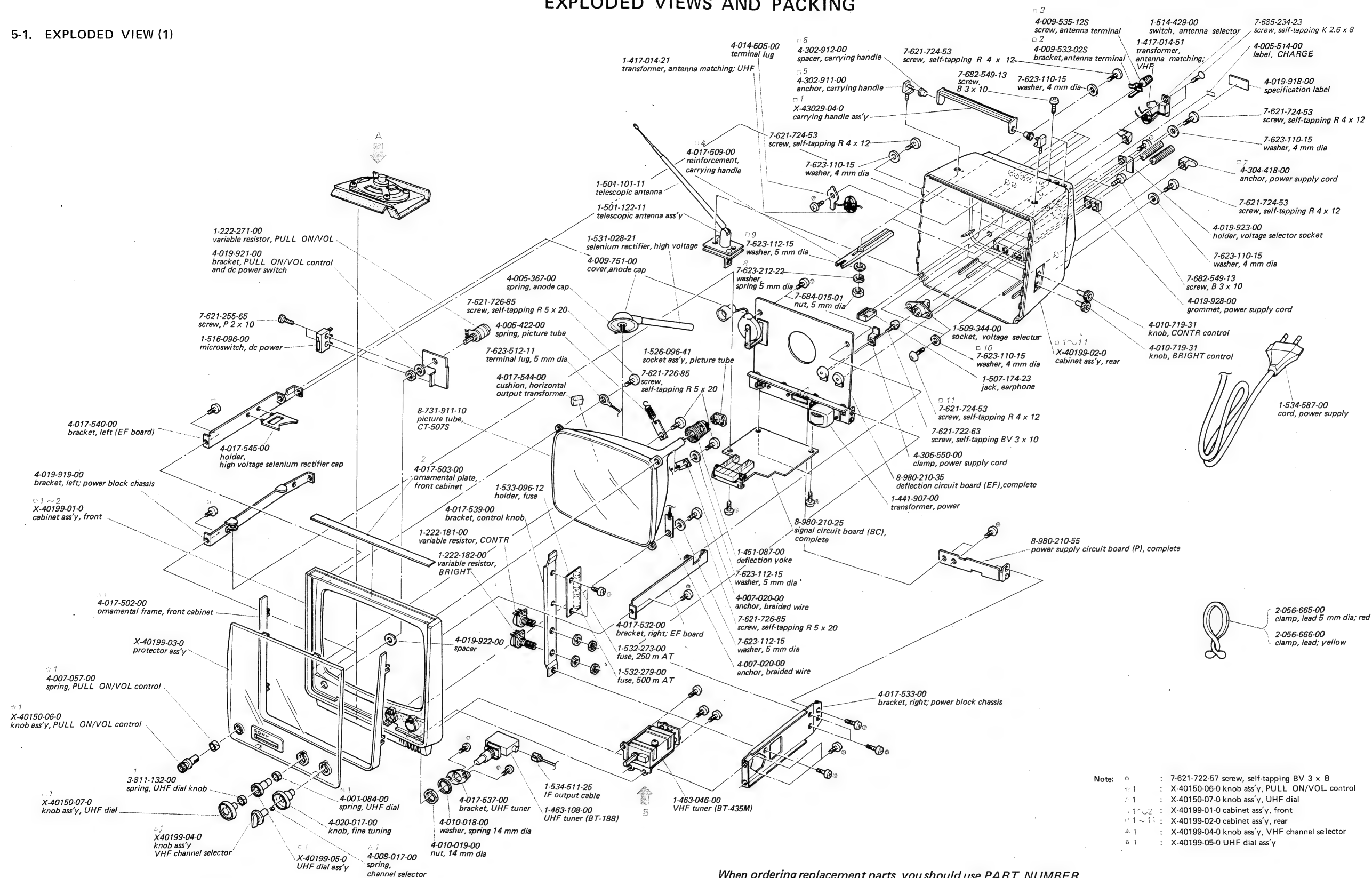
10. As for the resistors marked ★, replace the same value when it is necessary.

11.  $\Delta$  mark shows the internal components.

SECTION 5

EXPLODED VIEWS AND PACKING

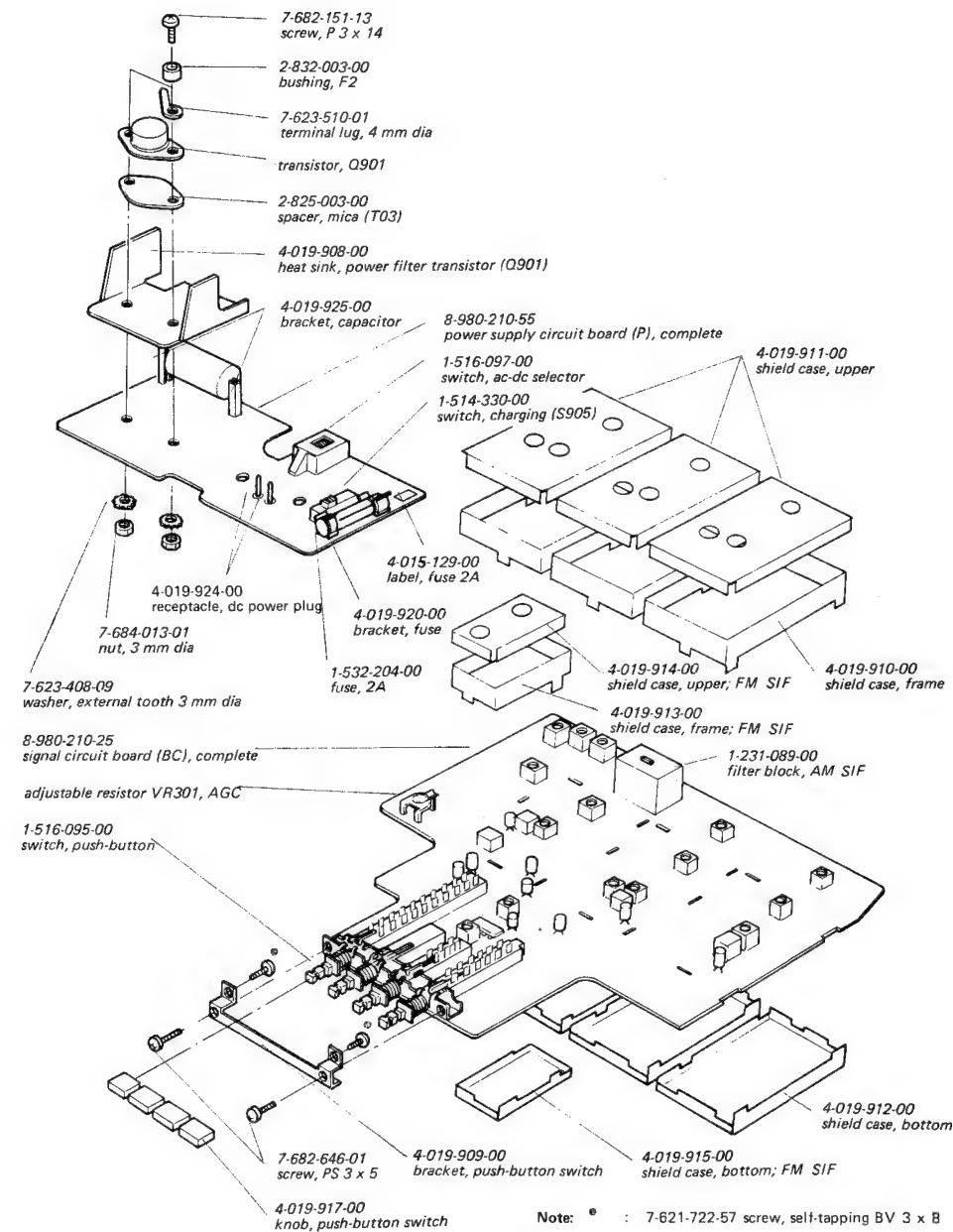
5-1. EXPLODED VIEW (1)



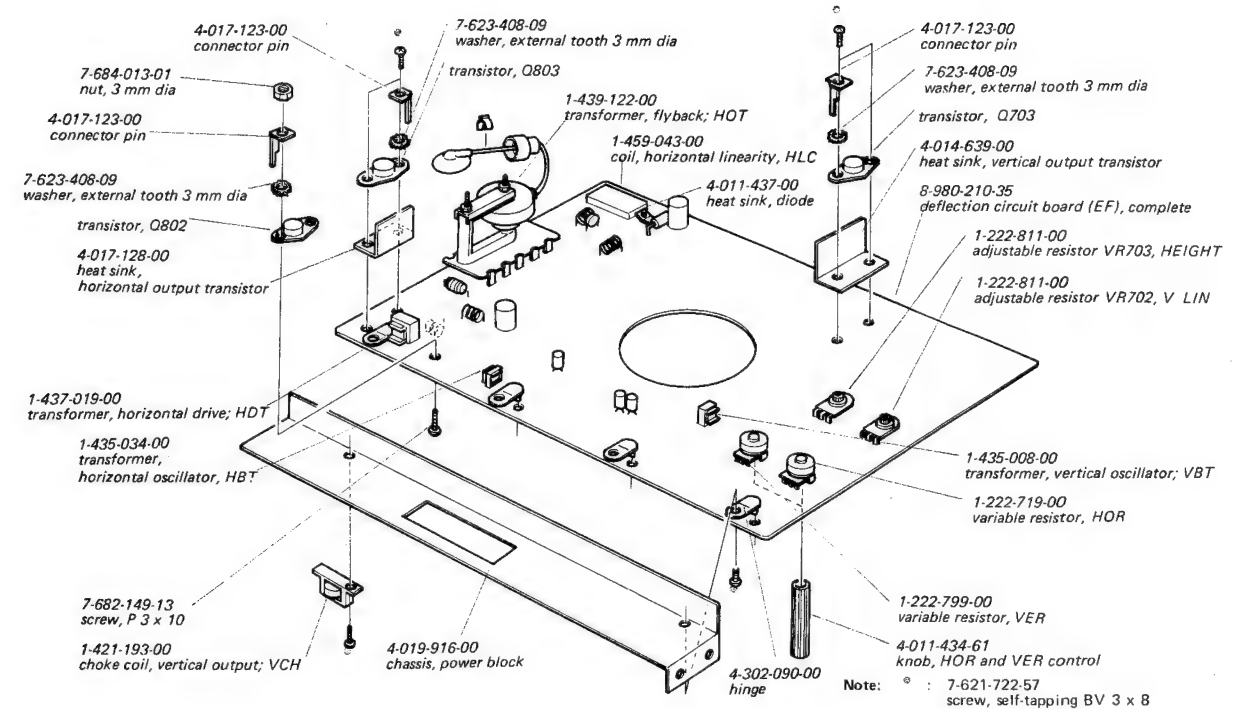
When ordering replacement parts, you should use PART NUMBER listed on the Parts List or shown in the EXPLODED VIEW. The reference number should not be used for ordering purposes.

Note: All Screws in this set are Phillips type (cross recess type).

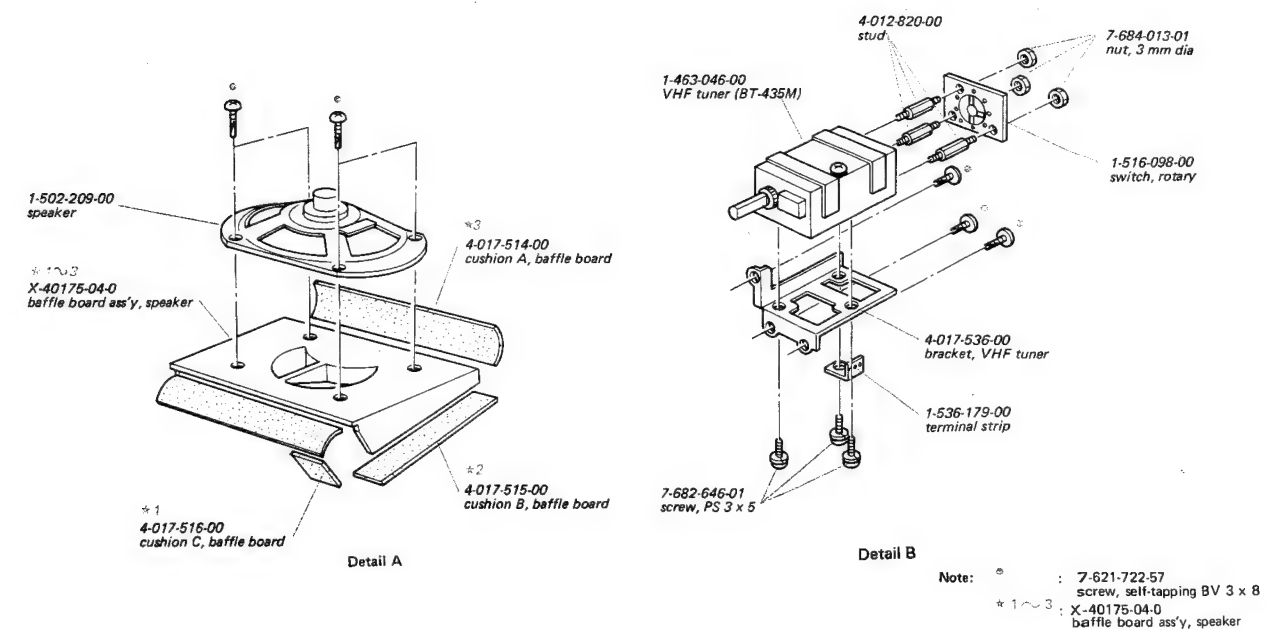
5-2. EXPLODED VIEW (2)



5-3. EXPLODED VIEW (3)



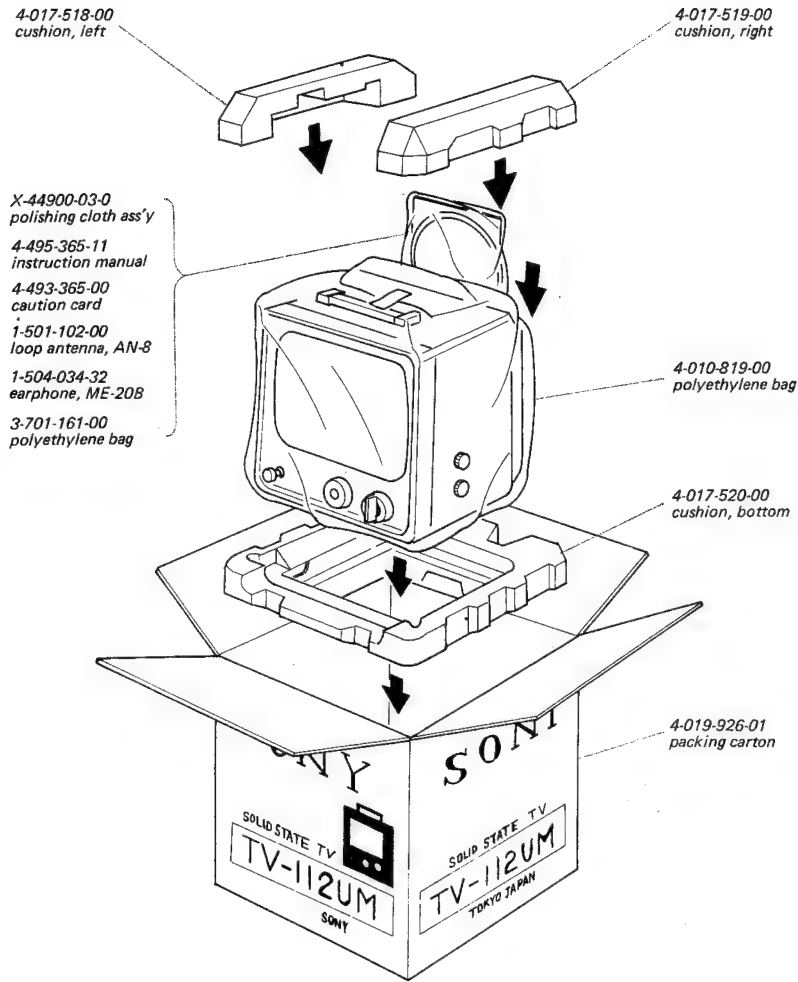
5-4. EXPLODED VIEW (4)



SECTION 6

ELECTRICAL PARTS LIST

5-5. PACKING



Hardware Nomenclature

<b>P</b> — Pan Head Screw		<b>SC</b> — Set Screw	
<b>PS</b> — Pan Head Screw with Spring Washer		<b>E</b> — Retaining Ring (E Washer)	
<b>K</b> — Flat Countersunk Head Screw		<b>W</b> — Washer	
<b>B</b> — Binding Head Screw		<b>SW</b> — Spring Washer	
<b>RK</b> — Oval Countersunk Head Screw		<b>LW</b> — Lock Washer	
<b>T</b> — Truss Head Screw		<b>N</b> — Nut	
<b>R</b> — Round Head Screw		— Example —	
<b>F</b> — Flat Fillister Head Screw			

Ref. No.	Part No.	Description
GENERAL		
1-463-046-00		VHF tuner (BT-435 M)
1-463-108-00		UHF tuner (BT-188)
8-980-210-25		signal circuit board (BC), complete
8-980-210-35		deflection circuit board (EF), complete
8-980-210-55		power supply circuit board (P), complete

SEMICONDUCTORS		To Replace	Substitute This Type
Q301	transistor	2SC1129	
Q302	transistor	2SC1129	
Q303	transistor	2SC1128	
Q304	transistor	2SC633A	2SC634A
Q305	transistor	2SA677	2SA678
Q351	transistor	2SC1128	
Q352	transistor	2SC1129	
Q353	transistor	2SC1128	
Q354	transistor	2SC1128	
Q355	transistor	2SC1129	
Q356	transistor	2SC1128	
Q357	transistor	2SC633A	2SC634A
Q501	transistor	2SC403C	
Q502	transistor	2SC403C	
Q503	transistor	2SC1127	
Q551	transistor	2SC633A	2SC634A
Q552	transistor	2SC1013	2SC1014
Q553	transistor	2SA623	
Q601	transistor	2SA182	
Q602	transistor	2SC633A	2SC634A
Q701	transistor	2SC633A	2SC634A
Q702	transistor	2SA677	2SA678
Q703	transistor	2SD292	
Q801	transistor	2SC403B	
Q802	transistor	2SD291	2SD292
Q803	transistor	2SC895	
Q901	transistor	2SB407	
D301	diode	1T261 ; included in video detector block	
D302	diode	1T261 ; included in AGC detector block	
D351	diode	1N60 ; included in AM SIF detector block	
D352	diode	1N60 ; included in AM SIF detector block	
D353	diode	1T261	
D354	diode	1T261	
D401	diode	S6-10	
D501	diode	MZ-00	2SC403C
D502	diode	UFSD-1A	HFSD-1A

Ref. No.	Part No.	Description	To Replace	Substitute This Type
D551		diode	1S2076	1S1555
D552		diode	1S2076	1S1555
D601		diode	1T22	1T22A
D602		diode	1T22	1T22A
D701		diode	1T22A	
D702		diode	1T22A	
D801		diode	1T22A	
D802		diode	SB-2	
D803		diode	HFSD-1A	
D901		diode	10D-2	10D-6
D902		diode	10D-2	10D-6
D903		diode	10D-2	10D-6
D904		diode	10D-2	10D-6
	1-403-351-00	AGC detector block; including D302		
	1-403-353-00	video detector block; including D301		
	1-403-366-00	AM SIF detector block; including diode, 1N60 (D351, D352)		
IC401	8-759-424-00	IC, AN-240		
TH301	8-690-003-00	thermistor, S-90		
COILS				
L1	1-407-178-00	1 $\mu$ H, micro inductor		
L301	1-409-153-00	coil, wave trap; 40.4 MHz		
L302	1-409-150-00	coil, wave trap; 33.4 MHz		
L303		-----		
L304		-----		
L305	1-407-184-00	3.3 $\mu$ H, micro inductor		
L306	1-407-177-00	470 $\mu$ H, micro inductor		
L307	1-407-177-00	470 $\mu$ H, micro inductor		
L308	1-409-153-00	coil, wave trap; 41.25 MHz		
L309	1-407-188-00	6.8 $\mu$ H, micro inductor		
L360	1-407-184-00	3.3 $\mu$ H, micro inductor		
L361	1-407-184-00	3.3 $\mu$ H, micro inductor		
L401		-----		
L402	1-407-166-00	56 $\mu$ H, micro inductor		
L501	1-407-178-00	1 $\mu$ H, micro inductor		
L502	1-407-178-00	1 $\mu$ H, micro inductor		
L503	1-409-036-00	coil, wave trap; 5.5 MHz		
L521	1-407-174-00	270 $\mu$ H, micro inductor		
L522	1-407-175-00	330 $\mu$ H, micro inductor		
L523	1-407-365-00	0.74 $\mu$ H, RF choke coil		
L601	1-407-175-00	330 $\mu$ H, micro inductor		
L701	1-421-193-00	choke coil, vertical output; VCH		
L801	1-421-013-00	25 $\mu$ H, micro inductor		
L802	1-407-366-00	1.7 $\mu$ H, RF choke coil		
L803	1-407-366-00	1.7 $\mu$ H, RF choke coil		
L804	1-407-220-00	2.2 $\mu$ H, RF choke coil		
L805	1-407-366-00	1.7 $\mu$ H, RF choke coil		
L806	1-459-043-00	coil, horizontal linearity, HLC		

Ref. No.   Part No.   Description

L901   1-407-169-00   100  $\mu$ H, micro inductor

### TRANSFORMERS

T1	1-417-014-21	transformer, antenna matching; UHF
T2	1-417-014-51	transformer, antenna matching; VHF
T301	1-403-508-00	transformer, video i-f
T302	1-403-508-00	transformer, video i-f
T303	1-403-510-00	transformer, video i-f
T351	1-403-534-00	transformer, AM sound i-f
T352	1-403-534-00	transformer, AM sound i-f
T353	1-403-535-00	transformer, AM sound i-f
T354	1-403-536-00	transformer, AM sound i-f
T355	1-403-536-00	transformer, AM sound i-f
T356	1-403-537-00	transformer, AM sound i-f
T357	1-403-538-00	transformer, AM sound i-f
T401	1-403-843-00	transformer, FM sound i-f discriminator
T501	1-403-354-00	transformer, FM sound i-f
T701	1-435-008-00	transformer, vertical oscillator; VBT
T801	1-435-034-00	transformer, horizontal oscillator; HBT
T802	1-437-019-00	transformer, horizontal drive; HDT
T803	1-439-122-00	transformer, flyback; HOT
T901	1-441-907-00	transformer, power

### CAPACITORS

Capacitors are in  $\mu$ F except as indicated with p,  $\pm \frac{100}{0} \%$ , 50 WV and ceramic unless otherwise specified. P means  $\mu$ F.

C234	1-127-022-11	0.5	$\pm 20 \%$	10 WV	solid aluminum electrolytic
C301	1-102-937-11	4 p	$\pm 0.25$ p		
C302	1-102-937-11	4 p	$\pm 0.25$ p		
C303		-----			
C304	1-101-004-11	0.01			
C305	1-101-004-11	0.01			
C306	1-101-004-11	0.01			
C307		-----			
C308	1-101-004-11	0.01			
C309	1-101-004-11	0.01			
C310	1-101-004-11	0.01			
C311	1-101-004-11	0.01			
C312		-----			
C313	1-101-004-11	0.01			
C314	1-121-413-11	100	$\pm \frac{100}{10} \%$	6.3 WV	electrolytic
C315	1-101-004-11	0.01			
C316	1-121-402-11	33	$\pm \frac{100}{10} \%$	10 WV	electrolytic
C317	1-101-837-11	0.5 p	$\pm 0.25$ p		
C318		-----			
C319	1-101-004-11	0.01			
C320		-----			
C321		-----			

Ref. No.   Part No.   Description

C322		-----			
C323		-----			
C324	1-101-004-11	0.01			
C325	1-121-398-11	10	$\pm \frac{100}{10} \%$	25 WV	electrolytic
C326	1-121-712-11	200	$\pm 20 \%$	10 WV	electrolytic
C327	1-121-409-11	47	$\pm \frac{100}{10} \%$	16 WV	electrolytic
C328	1-101-004-11	0.01			
C329	1-121-421-11	220	$\pm \frac{100}{10} \%$	16 WV	electrolytic
C330	1-101-004-11	0.01			
C331	1-101-004-11	0.01			
C332	1-102-947-11	10 P	$\pm 5 \%$		
C333	1-102-947-11	10 P	$\pm 5 \%$		
C334	1-101-004-11	0.01			
C335	1-121-398-11	10	$\pm \frac{100}{10} \%$	25 WV	electrolytic
C347	1-101-004-11	0.01			
C348	1-102-935-11	2 p	$\pm 0.25$ p		
C349	1-102-935-11	2 p	$\pm 0.25$ p		
C360	1-101-004-11	0.01			
C361	1-101-004-11	0.01			
C362	1-101-004-11	0.01			
C363		-----			
C364	1-101-004-11	0.01			
C365	1-101-004-11	0.01			
C366	1-101-004-11	0.01			
C367		-----			
C368	1-101-004-11	0.01			
C369	1-101-004-11	0.01			
C370	1-121-402-11	33	$\pm \frac{100}{10} \%$	10 WV	electrolytic
C371	1-101-004-11	0.01			
C372		-----			
C373	1-101-004-11	0.01			
C374		-----			
C375		-----			
C376	1-101-004-11	0.01			
C377	1-101-004-11	0.01			
C378	1-101-004-11	0.01			
C379	1-101-004-11	0.01			
C380		-----			
C381	1-101-004-11	0.01			
C382	1-101-004-11	0.01			
C383	1-101-004-11	0.01			
C384		-----			
C385	1-101-004-11	0.01			
C386	1-101-004-11	0.01			
C387	1-121-402-11	33	$\pm \frac{100}{10} \%$	10 WV	electrolytic
C388	1-101-004-11	0.01			
C389	1-102-949-11	12 p	$\pm 5 \%$		
C390		-----			
C391	1-101-004-11	0.01			
C392	1-102-936-11	3 p	$\pm 0.25$ p		
C393		-----			
C394		-----			
C395		-----			





<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			
C396	1-101-004-11	0.01			
C397	1-101-004-11	0.01			
C398	1-121-421-11	220	$\pm 100\%$	16 WV	electrolytic
C399	1-121-716-11	10	$\pm 20\%$	50 WV	electrolytic
C401	1-101-006-11	0.047			
C402	1-105-713-12	0.01	$\pm 10\%$	100 WV	mylar
C403	1-121-398-11	10	$\pm 100\%$	25 WV	electrolytic
C404		-----			
C405	1-102-667-11	13 p	$\pm 5\%$		
C406	1-101-004-11	0.01			
C407	1-121-398-11	10	$\pm 100\%$	25 WV	electrolytic
C408	1-102-959-11	22 p	$\pm 5\%$		
C409	1-101-006-11	0.047			
C410	1-101-004-11	0.01			
C411	1-121-398-11	10	$\pm 100\%$	25 WV	electrolytic
C501	1-121-398-11	10	$\pm 100\%$	25 WV	electrolytic
C502	1-101-886-11	62 p	$\pm 5\%$		
C503	1-102-849-11	62 p	$\pm 5\%$		
C504	1-102-888-11	150 p	$\pm 5\%$		
C505	1-101-886-11	62 p	$\pm 5\%$		
C506	1-121-409-11	47	$\pm 100\%$	16 WV	electrolytic
C507	1-103-610-11	240 p		50 WV	polystyrene
C508	1-101-004-11	0.01			
C521	1-121-403-11	33	$\pm 100\%$	16 WV	electrolytic
C522	1-105-701-12	0.001	$\pm 10\%$	100 WV	mylar
C523	1-121-415-11	100	$\pm 100\%$	16 WV	electrolytic
C524	1-113-127-11	0.22	$\pm 20\%$	250 WV	paper
C525	1-121-246-11	4.7	$\pm 150\%$	160 WV	electrolytic
C526	1-113-122-11	0.047	$\pm 20\%$	500 WV	paper
C527		-----			
C528	1-127-092-11	0.33	$\pm 20\%$	25 WV	solid aluminum electrolytic
C529	1-101-845-11	0.001		500 WV	
C530	1-101-845-11	0.001		500 WV	
C531		-----			
C551	1-121-398-11	10	$\pm 100\%$	25 WV	electrolytic
C552	1-121-415-11	100	$\pm 100\%$	16 WV	electrolytic
C553	1-102-982-11	180 p	$\pm 10\%$		
C554	1-101-882-11	51 p	$\pm 5\%$		
C555	1-121-421-11	220	$\pm 100\%$	16 WV	electrolytic
C556	1-121-421-11	220	$\pm 100\%$	16 WV	electrolytic
C601	1-127-025-11	3.3	$\pm 20\%$	10 WV	solid aluminum electrolytic
C602	1-121-395-11	4.7	$\pm 150\%$	25 WV	electrolytic
C603	1-102-979-11	240 p			
C604	1-121-392-11	3.3	$\pm 150\%$	25 WV	electrolytic
C605	1-105-715-12	0.015	$\pm 10\%$	100 WV	mylar
C606	1-105-721-12	0.047	$\pm 10\%$	100 WV	mylar
C607	1-105-713-12	0.01	$\pm 10\%$	100 WV	mylar
C608	1-105-713-12	0.01	$\pm 10\%$	100 WV	mylar
C609	1-105-717-12	0.022	$\pm 10\%$	100 WV	mylar
C610		-----			
C611	1-121-393-11	3.3	$\pm 150\%$	50 WV	electrolytic

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			
C612	1-127-025-11	3.3	$\pm 20\%$	10 WV	solid aluminum electrolytic
C613	1-105-721-12	0.047	$\pm 10\%$	100 WV	mylar
C701	1-127-232-11	4.7	$\pm 20\%$	25 WV	solid aluminum electrolytic
C702	1-131-158-11	10	$\pm 20\%$	16 WV	tantalum
C703	1-121-403-11	33	$\pm 100\%$	16 WV	electrolytic
C704	1-127-026-11	4.7	$\pm 20\%$	10 WV	solid aluminum electrolytic
C705	1-121-415-11	100	$\pm 100\%$	16 WV	electrolytic
C706	1-121-426-11	470	$\pm 100\%$	16 WV	electrolytic
C801	1-105-715-12	0.015	$\pm 10\%$	100 WV	mylar
C802	1-105-713-12	0.01	$\pm 10\%$	100 WV	mylar
C803	1-129-776-11	0.022	$\pm 5\%$	50 WV	polypropylene
C804	1-105-717-12	0.022	$\pm 10\%$	100 WV	mylar
C805	1-105-703-12	0.001	$\pm 10\%$	100 WV	mylar
	1-105-705-12	0.0022	$\pm 10\%$	100 WV	mylar
	1-105-707-12	0.0033	$\pm 10\%$	100 WV	mylar
	1-105-709-12	0.0047	$\pm 10\%$	100 WV	mylar
	1-105-711-12	0.0068	$\pm 10\%$	100 WV	mylar
C806	1-105-713-12	0.01	$\pm 10\%$	100 WV	mylar
	1-105-703-12	0.001	$\pm 10\%$	100 WV	mylar
	1-105-705-12	0.0022	$\pm 10\%$	100 WV	mylar
	1-105-707-12	0.0033	$\pm 10\%$	100 WV	mylar
C807	1-105-709-12	0.0047	$\pm 10\%$	100 WV	mylar
	1-101-005-11	0.022			
C808	1-105-725-12	0.1	$\pm 10\%$	100 WV	mylar
C809	1-101-005-11	0.022			
C810	1-101-845-11	0.001		500 WV	
C811	1-105-466-16	0.0068	$\pm 10\%$	600 WV	mylar
C812	1-105-461-16	0.001	$\pm 10\%$	600 WV	mylar
	1-105-462-16	0.0015	$\pm 10\%$	600 WV	mylar
	1-105-463-16	0.0022	$\pm 10\%$	600 WV	mylar
	1-105-464-16	0.0033	$\pm 10\%$	600 WV	mylar
	1-105-465-16	0.0047	$\pm 10\%$	600 WV	mylar
C813	1-105-461-16	0.001	$\pm 10\%$	600 WV	mylar
	1-105-462-16	0.0015	$\pm 10\%$	600 WV	mylar
	1-105-463-16	0.0022	$\pm 10\%$	600 WV	mylar
	1-105-464-16	0.0033	$\pm 10\%$	600 WV	mylar
C814	1-101-845-11	0.001		500 WV	
C815	1-129-496-11	1.8	$\pm 10\%$	100 WV	metalized mylar
C816	1-129-497-11	1	$\pm 10\%$	100 WV	metalized mylar
C817	1-101-845-11	0.001		500 WV	
C818	1-121-703-11	100	$\pm 100\%$	50 WV	electrolytic
C819	1-121-703-11	100	$\pm 100\%$	50 WV	electrolytic
C820	1-121-409-11	47	$\pm 100\%$	16 WV	electrolytic
C821	1-101-006-11	0.047			
C822	1-101-006-11	0.047			
C823	1-101-845-11	0.001		500 WV	
C824	1-101-845-11	0.001		500 WV	
C901	1-101-003-11	0.0047			



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C902	1-101-003-11	0.0047
C903	1-101-003-11	0.0047
C904	1-101-003-11	0.0047
C905	1-123-035-11	2200 $\pm \frac{100}{10} \%$ 25 WV electrolytic
C906	1-121-426-11	470 $\pm \frac{100}{10} \%$ 16 WV electrolytic
C907	1-121-426-11	470 $\pm \frac{100}{10} \%$ 16 WV electrolytic
C908	1-121-426-11	470 $\pm \frac{100}{10} \%$ 16 WV electrolytic
C909	1-121-409-11	47 $\pm \frac{100}{10} \%$ 16 WV electrolytic
C910	1-121-409-11	47 $\pm \frac{100}{10} \%$ 16 WV electrolytic

### RESISTORS

All resistors are in ohm, carbon,  $\pm 5 \%$  and 1/4 W unless otherwise specified. As for the resistors marked with  $\infty$ , replace the same value when it is necessary.

R151	1-244-660-11	300	
R301	1-244-637-11	33	
R302	1-244-649-11	100	
R303	1-244-659-11	270	
R304	1-202-003-11	2 k	1/8 W, composition
	1-201-821-11	3 k	1/8 W, composition
	1-202-018-11	3.9 k	1/8 W, composition
R305	1-244-666-11	510	
R306	1-244-649-11	100	
R307	1-244-659-11	270	
R308	1-202-018-11	3.9 k	1/8 W, composition
	1-201-864-11	5.6 k	1/8 W, composition
	1-202-032-11	6.8 k	1/8 W, composition
R309	1-244-653-11	150	
R310	1-244-686-11	3.6 k	
R311	1-244-675-11	1.2 k	
R312	1-244-653-11	150	
R313	1-202-062-11	20 k	1/8 W, composition
	1-201-861-11	27 k	1/8 W, composition
	1-202-069-11	30 k	1/8 W, composition
R314	1-244-646-11	75	
R315	1-244-687-11	3.9 k	
R316	1-244-696-11	9.1 k	
R317	1-244-686-11	3.6 k	
	1-244-687-11	3.9 k	
	1-244-688-11	4.3 k	
	1-244-689-11	4.7 k	
	1-244-690-11	5.1 k	
R318	1-244-676-11	1.3 k	
R319	1-244-655-11	180	
R320	1-244-657-11	220	
R321	1-244-660-11	300	
R322	1-244-641-11	47	
R323	1-244-703-11	18 k	
	1-244-704-11	20 k	
	1-244-705-11	22 k	
R324	1-244-681-11	2.2 k	
R325	1-244-700-11	13 k	

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R326	1-244-664-11	430
R351	1-244-649-11	100
R352	1-244-673-11	1 k
R353	1-244-660-11	300
R354	1-202-038-11	8.2 k 1/8 W, composition
	1-201-865-11	10 k 1/8 W, composition
	1-201-866-11	15 k 1/8 W, composition
R355	1-244-660-11	300
R356	1-244-695-11	8.2 k
R357	1-244-684-11	3 k
R358	1-244-660-11	300
R359	1-202-038-11	8.2 k 1/8 W, composition
	1-201-865-11	10 k 1/8 W, composition
	1-201-866-11	15 k 1/8 W, composition
R360	1-244-660-11	300
R361	1-244-696-11	9.1 k
R362	1-244-675-11	1.2 k
R363	1-244-651-11	120
R364	1-202-025-11	5.1 k 1/8 W, composition
	1-202-032-11	6.8 k 1/8 W, composition
	1-202-038-11	8.2 k 1/8 W, composition
R365	1-244-653-11	150
R366	1-244-673-11	1 k
R367	1-244-649-11	100
R368	1-244-660-11	300
R369	1-202-038-11	8.2 k 1/8 W, composition
	1-201-865-11	10 k 1/8 W, composition
	1-201-866-11	15 k 1/8 W, composition
R370	1-244-660-11	300
R371	1-244-695-11	8.2 k
R372	1-244-684-11	3 k
R373	1-244-660-11	300
R374	1-202-038-11	8.2 k 1/8 W, composition
	1-201-865-11	10 k 1/8 W, composition
	1-201-866-11	15 k 1/8 W, composition
R375	1-244-660-11	300
R376	1-244-696-11	9.1 k
R377	1-244-675-11	1.2 k
R378	1-244-651-11	120
R379	1-202-038-11	8.2 k 1/8 W, composition
	1-201-865-11	10 k 1/8 W, composition
	1-201-866-11	15 k 1/8 W, composition
R380	1-244-653-11	150
R381	1-201-866-11	15 k 1/8 W, composition
	1-202-062-11	20 k 1/8 W, composition
R382	1-244-641-11	47
R383	1-244-704-11	20 k
R384	1-244-703-11	18 k
R385	1-244-699-11	12 k
R386	1-244-690-11	5.1 k
R401	1-244-657-11	220
R402	1-242-673-11	1 k
R403	1-244-717-11	68 k

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R404	1-244-673-11	1 k
R405	1-242-697-11	10 k
R406	1-242-723-11	120 k
R501	1-244-714-11	51 k
R502	1-244-710-11	36 k
R503	1-244-663-11	390
R504	1-244-663-11	390
R505	1-244-673-11	1 k
R506	1-244-708-11	30 k
R521	1-244-697-11	10 k
R522	1-244-916-11	62 k 1/2 W
	1-244-917-11	68 k 1/2 W
	1-244-918-11	75 k 1/2 W
	1-244-919-11	82 k 1/2 W
	1-244-920-11	91 k 1/2 W
	1-244-921-11	100 k 1/2 W
R523	1-244-643-11	56
R524	1-244-677-11	1.5 k
R525	1-206-032-11	5.6 k 2 W, metal oxide
R526	1-244-736-11	430 k
R527		-----
R528		-----
R529	1-244-631-11	18
R530	1-244-699-11	12 k
R531	1-244-691-11	5.6 k
R532	1-244-690-11	5.1 k
R533	1-244-636-11	30
R551	1-244-708-11	30 k
R552	1-244-690-11	5.1 k
R553	1-244-624-11	9.1
R554	1-244-647-11	82
R555	1-244-657-11	220
R556	1-244-618-11	5.1
R557	1-244-655-11	180
R558	1-207-721-11	3.3 2 W, wire wound
R559	1-207-722-11	3.6 2 W, wire wound
R560	1-244-651-11	120
R561	1-244-673-11	1 k
R601	1-244-642-11	51
R602		-----
R603	1-244-697-11	10 k
R604	1-244-737-11	470 k
R605	1-244-673-11	1 k
R606	1-244-684-11	3 k
R607	1-244-701-11	15 k
R608	1-244-712-11	43 k
R609	1-244-656-11	200
R610	1-244-682-11	2.4 k
R611	1-244-680-11	2 k
R612	1-244-697-11	10 k
R613	1-244-682-11	2.4 k
R614	1-206-011-11	6.8 k 2 W, metal oxide
R615	1-244-675-11	1.2 k

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R616	1-244-680-11	2 k
	1-244-682-11	2.4 k
	1-244-683-11	2.7 k
	1-244-684-11	3 k
	1-244-685-11	3.3 k
	1-244-686-11	3.6 k
	1-244-687-11	3.9 k
	1-244-688-11	4.3 k
	1-244-689-11	4.7 k
	1-244-690-11	5.1 k
R617	1-244-691-11	5.6 k
	1-244-692-11	6.2 k
	1-244-693-11	6.8 k
	1-244-694-11	7.5 k
	1-244-695-11	8.2 k
	1-244-697-11	10 k
	1-244-680-11	2 k
	1-244-682-11	2.4 k
	1-244-683-11	2.7 k
	1-244-684-11	3 k
R618	1-244-685-11	3.3 k
	1-244-686-11	3.6 k
	1-244-687-11	3.9 k
	1-244-688-11	4.3 k
	1-244-689-11	4.7 k
	1-244-690-11	5.1 k
	1-244-691-11	5.6 k
	1-244-692-11	6.2 k
	1-244-693-11	6.8 k
	1-244-694-11	7.5 k
R619	1-244-695-11	8.2 k
	1-244-666-11	510
	1-244-697-11	10 k
	1-244-655-11	180
	1-244-660-11	300
	1-244-688-11	4.3 k
	1-244-677-11	1.5 k
	1-244-625-11	10
	1-244-688-11	4.3 k
	1-244-690-11	5.1 k
R711	1-244-703-11	18 k
	1-244-680-11	2 k
	1-244-680-11	2 k
	1-244-688-11	4.3 k
	1-244-656-11	200
	1-244-661-11	330
	1-244-665-11	470
	1-244-668-11	620
	1-244-670-11	750
	1-244-671-11	820
R710	1-244-672-11	910
	1-244-673-11	1 k
	1-244-674-11	1.1 k

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>
R711	1-244-675-11	1.2 k
	1-244-676-11	1.3 k
	1-244-677-11	1.5 k
	1-244-678-11	1.6 k
	1-244-679-11	1.8 k
R712	1-244-665-11	470
R713	1-207-469-11	3.3      ½ W      wire wound
R714	1-244-662-11	360
R801	1-244-688-11	4.3 k
R802	1-244-673-11	1 k
R803	1-244-666-11	510
R804	1-244-666-11	510
R805	1-244-660-11	300
R806	1-244-691-11	5.6 k
R807	1-244-642-11	51
R808	1-207-473-11	6.8      ½ W      wire wound
R809	1-207-467-11	2.2      ½ W      wire wound
R901	1-207-677-11	8.2      5 W      wire wound
R902	1-244-649-11	100
VR301	1-222-516-00	470-B, adjustable; AGC
VR521	1-222-182-00	25 k-B, variable; BRIGHT
VR522	1-222-181-00	1 k-E, variable, CONTR
VR551 } S901 }	1-222-271-00	5 k-D, variable; PULL ON/VOL
VR601	1-222-719-00	1 k-B, variable; HOR
VR701	1-222-799-00	2 k-B, variable; VER
VR702	1-222-811-00	5 k-B, adjustable; V LIN
VR703	1-222-811-00	5 k-B, adjustable; HEIGHT
VR901	1-222-517-00	1 k-B, adjustable, 12 V adj

Ref. No.    Part No.    Description

**MISCELLANEOUS**

	1-231-089-00	filter block, AM SIF
DY	1-451-087-00	deflection yoke
	1-501-122-11	telescopic antenna ass'y, including
	1-501-101-21	telescopic antenna
SP	1-502-209-00	speaker
J551	1-507-174-23	jack, earphone ; REC
J552	1-507-174-23	jack, earphone ; EARPHONE
S902	1-509-344-00	socket, voltage selector
S905	1-514-330-00	switch, charging
S1	1-514-429-00	switch, antenna selector
SW1 ~		
SW13	1-516-095-00	switch, push-button
S906	1-516-096-00	microswitch, dc power
S903 ) S904 )	1-516-097-00	switch, ac-dc selector
	1-516-098-00	switch, rotary
	1-526-096-41	socket ass'y, picture tube
	1-531-028-21	selenium rectifier, high voltage (D804)
F903	1-532-204-00	fuse, 2A
F902	1-532-273-00	fuse, 250 m AT
F901	1-532-279-00	fuse, 500 m AT
	1-533-096-12	holder, fuse
	1-534-511-25	IF output cable
	1-534-587-00	cord, power supply
	1-536-179-00	terminal strip
	8-731-911-10	picture tube, CT-507S

\* : to be selected

B&amp;W TV

TV-112UM

No. 2  
January, 1974

# SUPPLEMENT

**Subject: Electrical and Mechanical Modifications**

This supplement updates the service manual to include production changes starting with **Serial No. 29,101**.  
File this supplement with the service manual.

## 1. INTRODUCTION

Some electrical and mechanical parts have been changed along with UHF tuner (BT-186).

## 2. CHANGED PARTS LIST (Serial No. 29,101 and later)

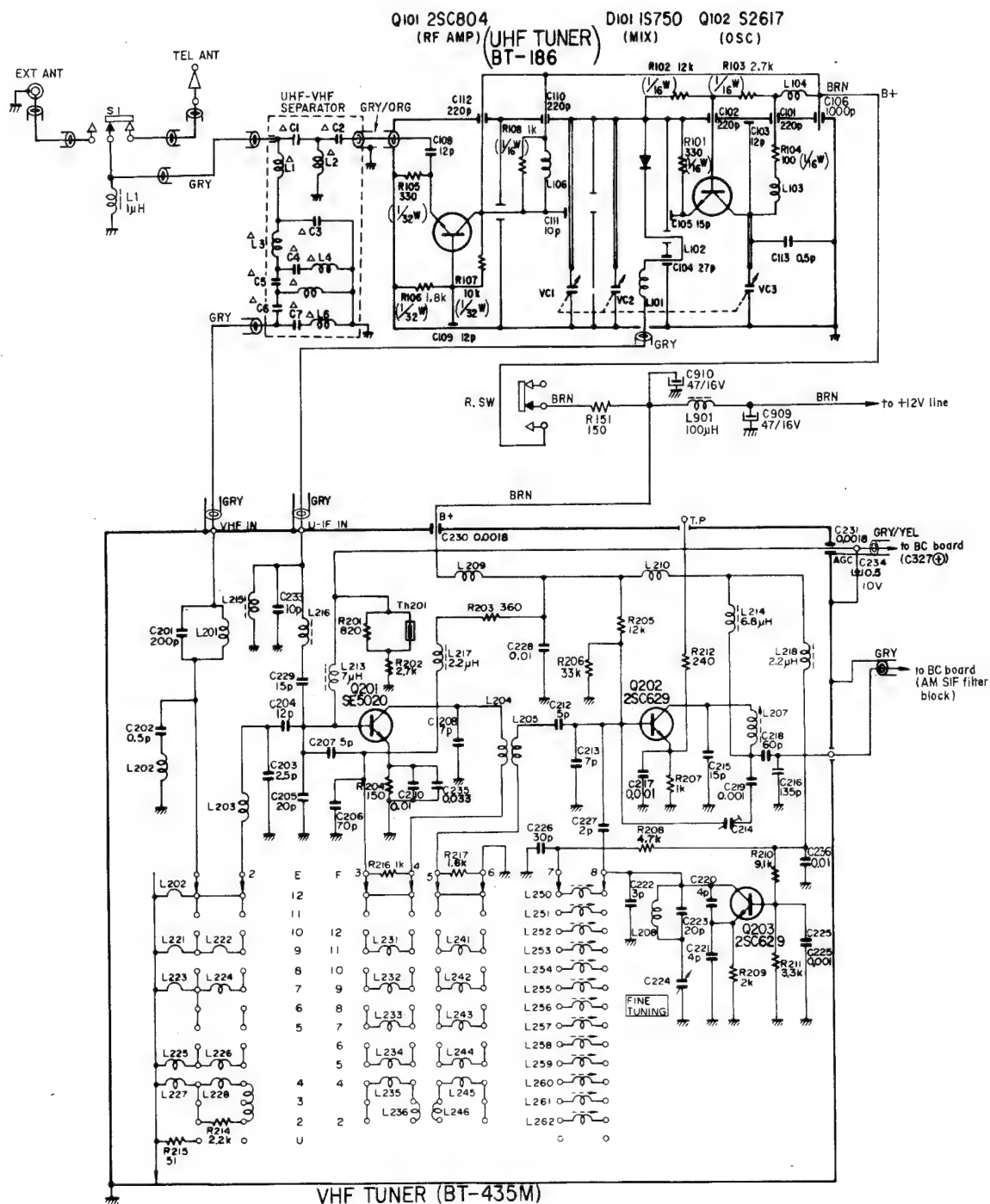
Ref. No.	Former Part No./Part Value	New Part No./Part Value
	1-463-108-00 UHF tuner (BT-188)	1-463-004-00 UHF tuner (BT-186)
T1	1-417-014-21 Transformer, antenna matching; UHF	-----
T2	1-417-014-51 Transformer, antenna matching; VHF	-----
R151	1-244-660-11 300 $\Omega$ $\frac{1}{4}$ W $\pm 5\%$ carbon	1-244-653-11 150 $\Omega$ $\frac{1}{4}$ W $\pm 5\%$ carbon
	-----	1-417-020-61 UHF-VHF separator (DFE-1)
	-----	1-508-086-00 Connector, external antenna

**SONY**  
**SERVICE MANUAL**

## 3. SCHEMATIC DIAGRAM

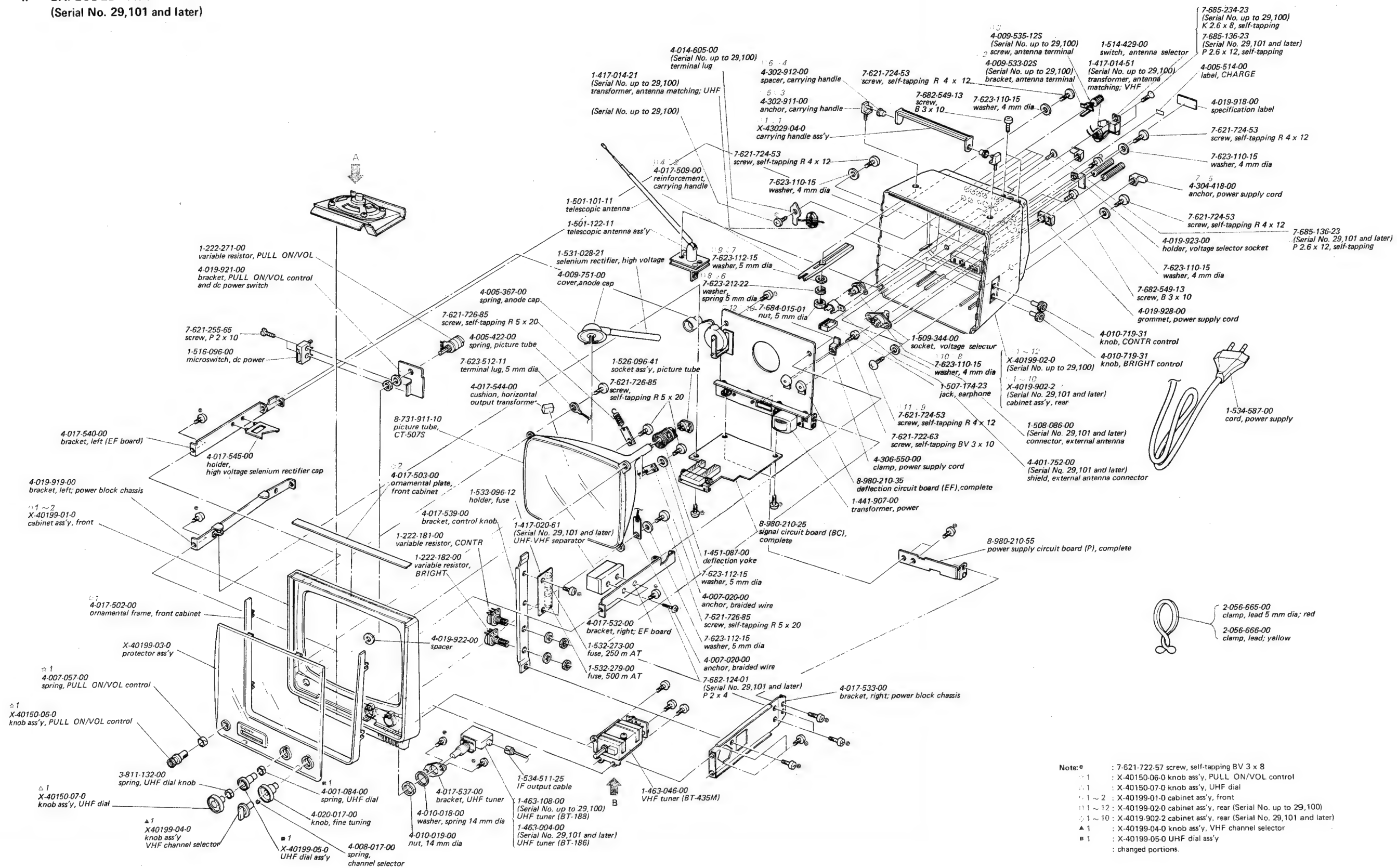
(Serial No. 29,101 and later)

— UHF-VHF Separator (DFE-1) and UHF Tuner (BT-186) —



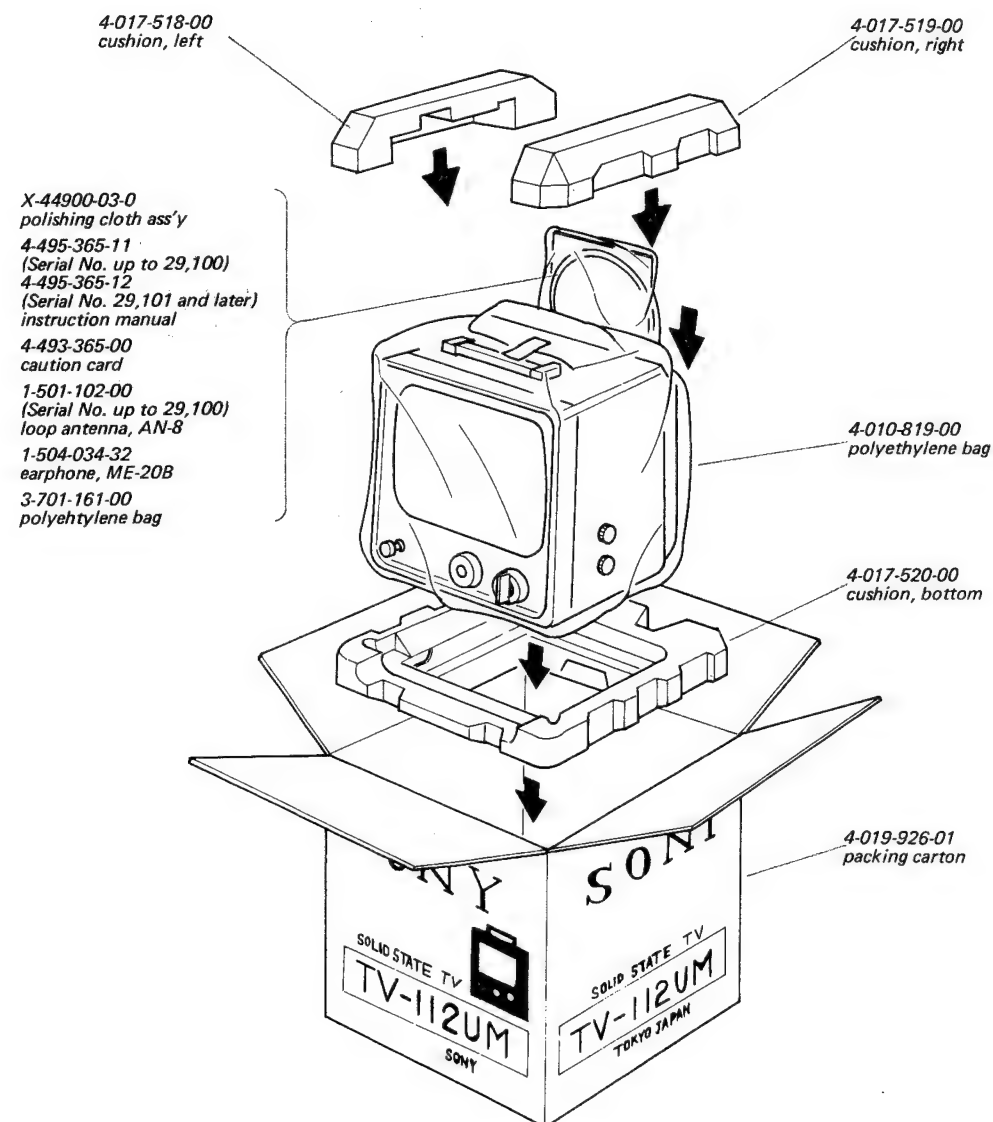
Note: : changed portions.

(Serial No. 29,101 and later)





5. PACKING  
(Serial No. 29,101 and later)



Note: . . . changed portions.

9-962-113-82

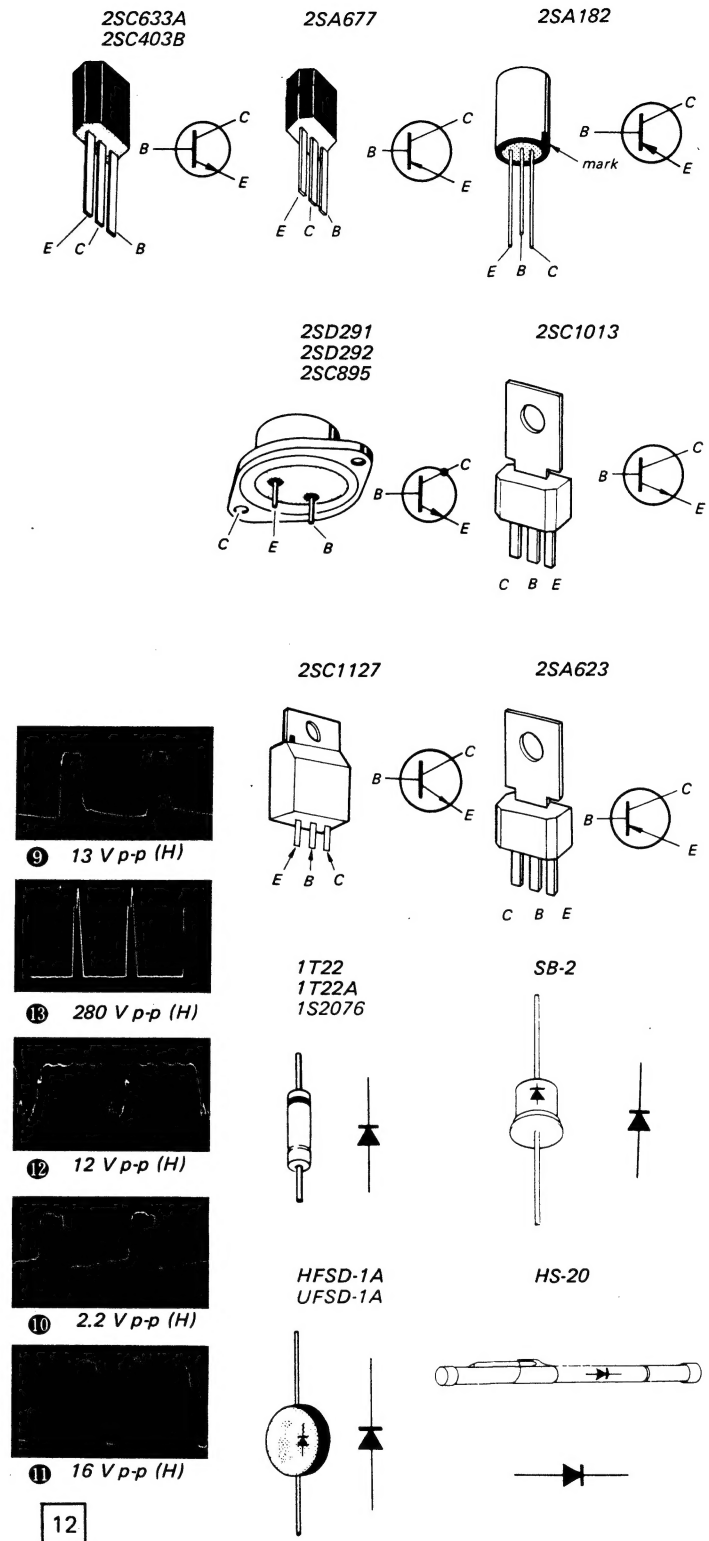
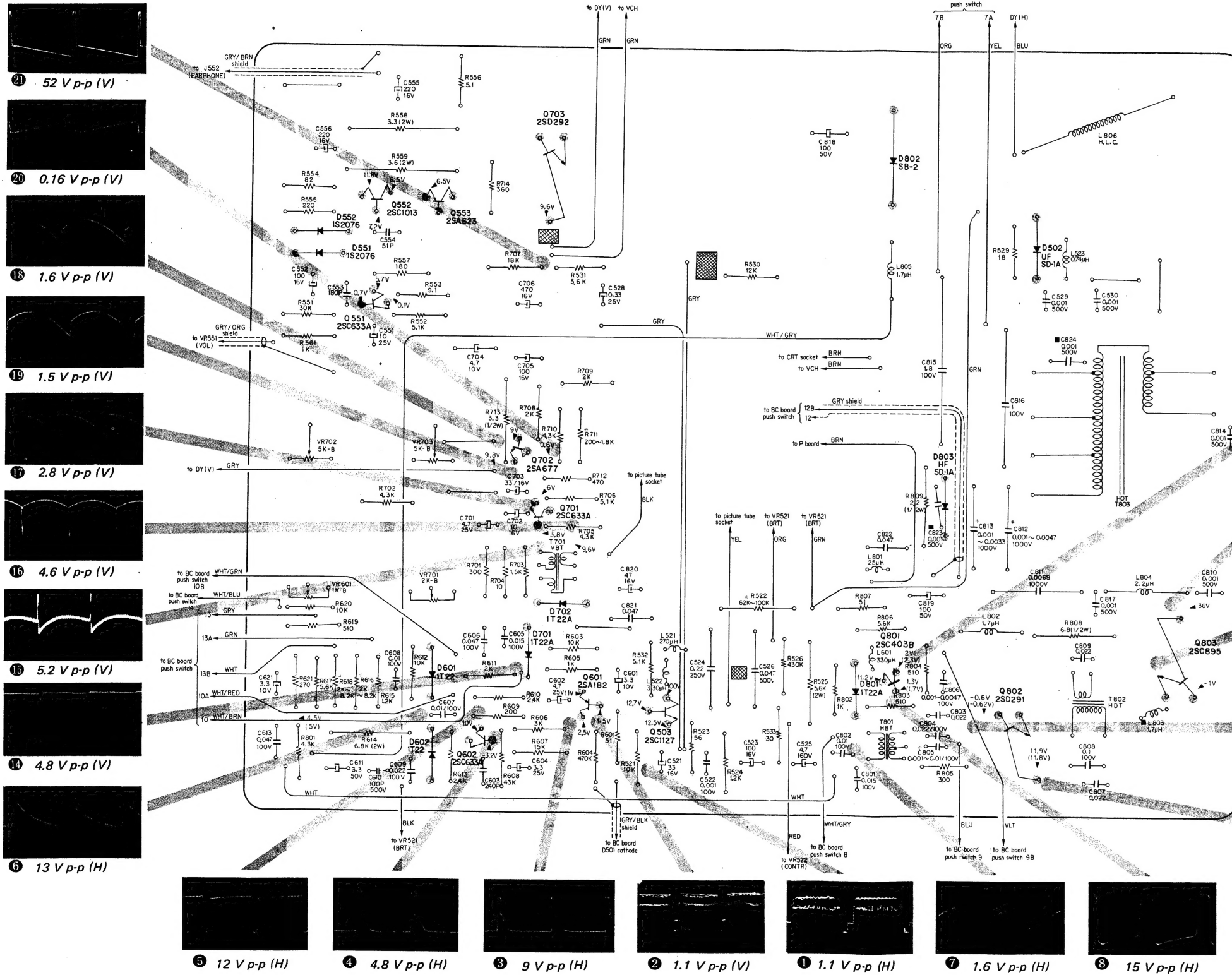
Sony Corporation

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7810508-5  
Printed in Japan

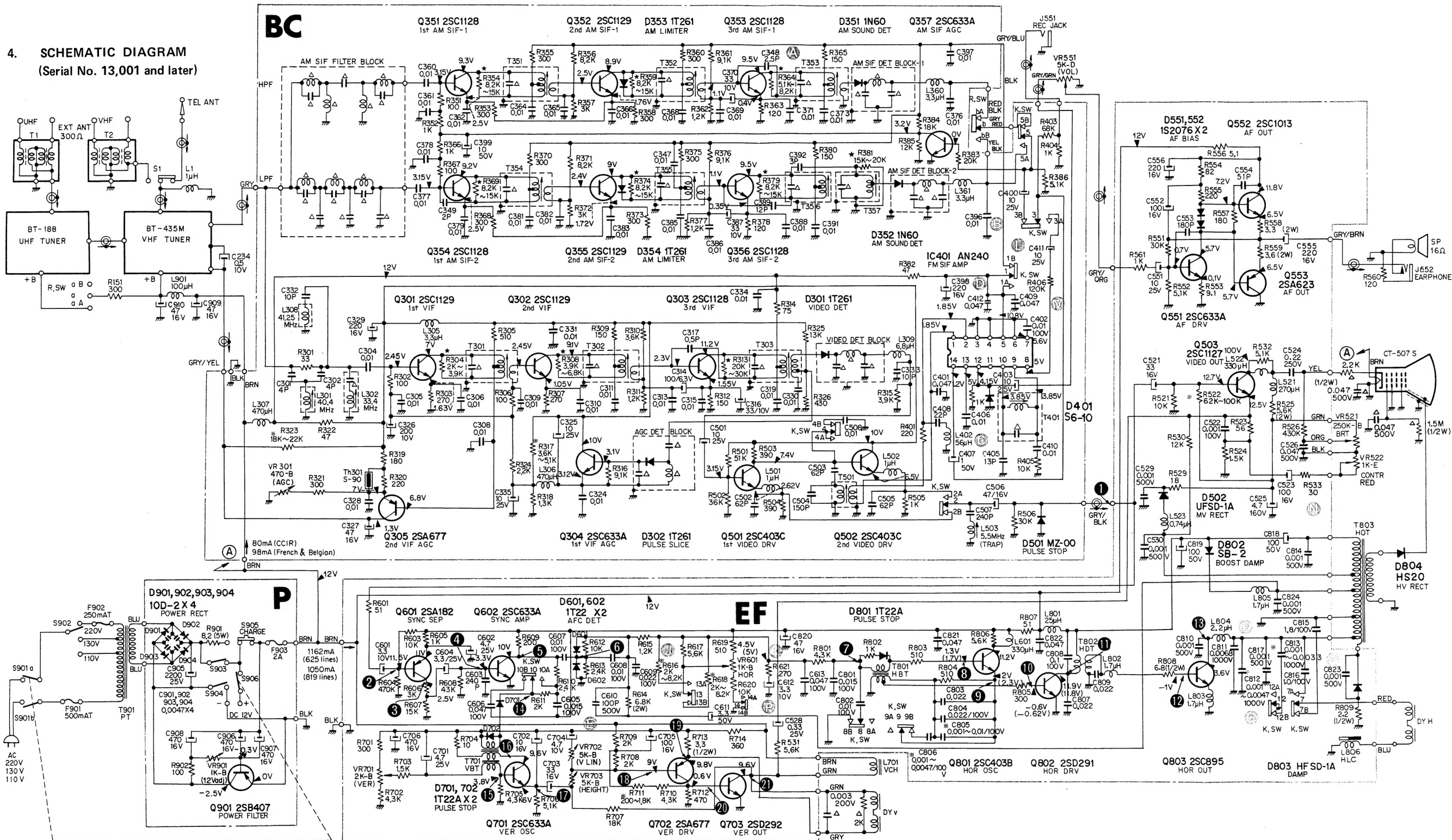
- 2 -

3. EF CIRCUIT BOARD  
(Serial No. 13,001 and later)



Note: The components marked with ■ are mounted on the conductor side.

4. SCHEMATIC DIAGRAM  
(Serial No. 13,001 and later)



Note: 1. All capacitors are 50 WV unless otherwise specified.

2. All capacitance values are in  $\mu\text{F}$  except as indicated with p, which means  $\mu\text{F}$ .

3. All resistors are  $\frac{1}{4}$  W unless otherwise specified.

4. All resistance values are in ohms. k = 1000.

5. Voltages measured from chassis to point indicated with a VOM (DC 20 k ohms/V) with no signal input (BC circuit and audio stages in EF circuit), and with signal input (EF circuit). The values shown in ( ) are measured with push switch set to 819.

6. Resistance and capacitance values marked  $\star$  are to be selected to yield specified operating conditions.

7. The red circled numbers (1 ~ 21) indicate the waveforms on pages 3 and 4.

8. Push-button switch (KSW 1 to KSW 14).

A ; on (push) position  
B ; off position  
KSW 1 ~ 4 ; CCIR  
KSW 5 ; 625B  
KSW 7 ~ 14 ; 819F

9. Rotary switch (RSW a, RSW b)

RSW a ; UHF  
aB ; VHF  
RSW b ; F2, 4, 5, 8, 10, 12 ch.  
bB ; F6, 7, 9, 11, U ch.

10. As for the resistors marked  $\star$ , replace the same value when it is necessary.

11.  $\Delta$  mark shows the internal components.

5. NEW ELECTRICAL PARTS LIST  
(Serial No. 13,001 and later)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
CAPACITORS					
Capacitors are in $\mu F$ except as indicated with p, $\pm 100\%$ , 50 WV and ceramic unless otherwise specified. P means $\mu\mu F$					
C348	1-101-574-11	2.5 p $\pm 0.25$ p	*C813	1-129-900-11	0.001 $\pm 10\%$ 1000 WV polyethylene
C400	1-121-398-11	10 $\pm 10\%$ 25 WV electrolytic		1-129-910-11	0.0015 $\pm 10\%$ 1000 WV polyethylene
C407	1-121-391-11	1 $\pm 75\%$ 50 WV electrolytic		1-129-901-11	0.0022 $\pm 10\%$ 1000 WV polyethylene
C412	1-101-006-11	0.0047		1-129-902-11	0.0033 $\pm 10\%$ 1000 WV polyethylene
C610	1-101-810-11	100 p $\pm 5\%$ 500 WV	RESISTORS		
C811	1-129-904-11	0.0068 $\pm 10\%$ 1000 WV polyethylene	All resistors are in ohm, carbon, $\pm 5\%$ and $\frac{1}{4}$ W unless otherwise specified.		
*C812	1-129-900-11	0.001 $\pm 10\%$ 1000 WV polyethylene	R403	1-242-717-11	68 k
	1-129-910-11	0.0015 $\pm 10\%$ 1000 WV polyethylene	R404	1-242-673-11	1 k
	1-129-901-11	0.0022 $\pm 10\%$ 1000 WV polyethylene	R617	1-244-691-11	5.6 k
	1-129-902-11	0.0033 $\pm 10\%$ 1000 WV polyethylene	R621	1-244-659-11	270
	1-129-903-11	0.0047 $\pm 10\%$ 1000 WV polyethylene			

\* to be selected